

March 3, 2017

Melanie Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

RE: RE: AT&T Wireless Modifications to Telecommunication Facility –  
33 Boardman Road, New Milford, CT 06776

Dear Ms. Bachman:

Enclosed please find and original and two (2) copies of a Notice of Exempt Modification including drawings and a check in the amount of six hundred twenty five (\$625.00) for the filing fee. In addition, I have included copies of each notification letter mailed this day to the municipality, the Town Planner, and the owners of both the property and tower. Copies of the RF study and structural reports (without calculations) are also included.

I will submit electronic copies of the filings including the complete structural analysis and the RF table to you via e mail this day.

Please feel free to contact me with any questions or comments. Thank you for your kind cooperation in this matter.

Respectfully submitted,

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144  
[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

Enclosures

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
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443-677-0144  
[jandrews@empiretelecomm.com](mailto:jandrews@empiretelecomm.com)

March 3, 2017

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Acting Executive Director  
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10 Franklin Square  
New Britain, CT 06051

**NOTICE OF EXEMPT MODIFICATION**

33 Boardman Road, New Milford, CT 06776

Lat: 41-35-58 (41.59944444)  
Long. 73-26-15 (-73.4375)

Dear Ms. Bachman:

AT&T Wireless currently maintains twelve (12) antennas at the 120 foot level of an existing 150 foot tall "monopine" monopole tower located at 33 Boardman Road, in New Milford CT. The tower is owned by O&G Industries. The property is owned by Quarry Stone & Gravel, LLC. AT&T Wireless now seeks to replace three (3) existing antennas with three (3) new LTE Hexport antennas. These replacement antennas will be installed at the 120 foot level of the tower. AT&T Wireless also intends to install three (3) Ericsson RRU-32 and replace three (3) RRUs, all to be mounted behind the antennas at the 150 foot level.

This proposal was denied by the CSC on October 17, 2016, because the proposed modifications would have loaded the tower to 103% of its capacity. To allay this concern, the applicant also proposes to modify the base plate of the monopole, so as to load the tower to 97.2%.

The facility was approved by the Connecticut Siting Council in EM-CING-096-121108 on November 23, 2012. Five (5) conditions were enumerated in the Council's decision:

- 1) Any deviation from the modification as specified in the Notice and supporting materials shall render this acknowledgement invalid; 2) Any material changes to the modification as proposed shall require the filing of a new Notice with the Council; 3) Not less than 45 days after the completion of construction the Council shall be notified in writing that the construction has been completed; 4) The validity of the action shall expire one year from the date of the letter; and

5) The applicant may request an extension of time beyond the one year deadline provided that such a request is submitted to the Council not less than 60 days prior to the expiration.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies section 16-50j-73 for construction that constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2). In accordance with RCSA section 16-50j-73, a copy of this letter and attachments is being sent to the Honorable David Gronbach, the Mayor of the Town of New Milford, Kathy Castagnetta, Town Planner for New Milford, O&G Industries, the tower owner, as well as Quarry Stone & Gravel, LLC, the property owner.

The planned modifications to the facility fall squarely within those activities expressly provided for in RCSA section 50j-72(b)(2).

1. The proposed modifications will not result in an increase in height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that will exceed state and local limits.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under RCSA section 16-50j-72(b)(2).

Respectfully submitted,

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cc: The Honorable David Gronbach - as elected official  
Robert G Kovacs, Quarry Stone & Gravel, LLC - as property owner  
Sharon D. Okraska, O&G Industries – as Tower Owner  
Kathy Castagnetta, as New Milford Town Planner

---

Jack Andrews  
Zoning Manager, Empire Telecom o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144

March 3, 2017

The Honorable David Gronbach  
Mayor, Town of New Milford  
New Milford Town Hall  
10 Main Street  
New Milford, CT 06776

RE: AT&T Wireless Modifications to Telecommunication Facility –  
33 Boardman Road, New Milford, CT 06776

Dear Mayor Gronbach:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains twelve (12) antennas at the 120 foot level of an existing 150 foot tall “monopine” monopole tower located at 33 Boardman Road, in New Milford CT. The tower is owned by O&G Industries. The property is owned by Quarry Stone & Gravel, LLC.

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This letter is intended to serve as the required notice to the municipality. As required by the Regulations of Connecticut State Agencies (“RCSA”) section 16-50j-73, the Connecticut Siting Council (“CSC”) has been notified of the proposed changes and will review AT&T’s proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

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The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews  
Zoning Manager, Empire Telecom  
o/b/o AT&T Wireless  
10130 Donleigh Drive  
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Enclosures

cc: Melanie Bachman, Connecticut Siting Council

Jack Andrews  
Zoning Manager, Empire Telecom o/b/o AT&T Wireless  
10130 Donleigh Drive  
Columbia, MD 21046  
443-677-0144

March 3, 2017

Kathy Castagnetta, AICP  
New Milford Planning Department  
New Milford Town Hall  
10 Main Street  
New Milford, CT 06776

RE: AT&T Wireless Modifications to Telecommunication Facility –  
33 Boardman Road, New Milford, CT 06776

Dear Ms. Castagnetta:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains twelve (12) antennas at the 120 foot level of an existing 150 foot tall “monopine” monopole tower located at 33 Boardman Road, in New Milford CT. The tower is owned by O&G Industries. The property is owned by Quarry Stone & Gravel, LLC.

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10130 Donleigh Drive  
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443-677-0144

September 30, 2016

Sharon D. Okraska  
O&G Industries  
12 Wall Street  
Torrington, CT 06790

RE: AT&T Wireless Modifications to Telecommunication Facility –  
O&G Tower at 33 Boardman Road, New Milford, CT 06776

Dear Ms. Okraska:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains twelve (12) antennas at the 120 foot level of an existing 150 foot tall “monopine” monopole tower located at 33 Boardman Road, in New Milford CT. The tower is owned by O&G Industries. The property is owned by Quarry Stone & Gravel, LLC.

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Kathy Castagnetta, as New Milford Town Planner

---



Consultants

Com-Ex Consultants • 115 Route 46 Ste. E39, Mountain Lakes, NJ 07043

February 21, 2017

Mr. David Cooper  
Regional Director of Site Acquisition  
Empire Telecom USA LLC  
16 Esquire Road  
Billerica, MA 01862

**SUBJECT:** Site Id: CT2001 New Milford, CT 06776  
Structural Evaluation of (E) Monopine  
33 Boardman Road, New Milford, Fairfield County, CT  
Com-Ex Project #: 16035-EMP

Dear Mr. Cooper:

In accordance with your request, Com-Ex Consultants, LLC (Com-Ex) evaluated the structural impact of replacing one (1) existing antenna with one (1) HPA-65R-BUU-H6 CCI antenna per sector.

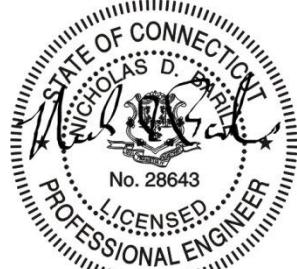
Com-Ex was provided a RFDS dated December 16, 2016. This analysis is based on that information.

Based on proposed base plate grouting modification indicated within our construction drawings, dated 2/22/17, the existing monopine can support proposed antenna equipment changes. Our analysis indicates the monopine capacity to be at 97.2%.

The assessment specifically assumes: The pole and foundation are in good repair and will be properly maintained. The original design and any previous upgrades were completed as per engineering documentation and manufacturer's requirements and were constructed accordingly.

Should you have any question or require additional information, please call me at 862-209-4300.

Sincerely,



Com-Ex Consultants, LLC  
Nicholas Barile, P.E.  
CT License #28643

**Attachment A**

Structural Wind Calculations for Antenna Mounts Standards:

TIA EIA 222 Revision G

American Society of Civil Engineers ASCE 7

American Steel Institute Construction AISC 14th Edition

Final Alpha Sector Antenna Configuration

Rad Center Antenna 120'-0"

- (1) (E) PowerWave 7770 antenna
- (2) (E) LGP21401 TMA
- (1) (E) HPA-65R-BUU-H6 CCI antenna
- (1) (N) RRUS-32
- (1) (N) HPA-65R-BUU-H6 CCI antenna
- (1) (N) RRUS-32 B2
- (1) (E) AM-X-CD-16-65-00T-RET KMW antenna
- (2) (E) RRUS11

Final Beta Sector Antenna Configuration

Rad Center Antenna 120'-0"

- (1) (E) PowerWave 7770 antenna
- (2) (E) LGP21401 TMA
- (1) (E) HPA-65R-BUU-H6 CCI antenna
- (1) (N) RRUS-32
- (1) (N) HPA-65R-BUU-H6 CCI antenna
- (1) (N) RRUS-32 B2
- (1) (E) AM-X-CD-16-65-00T-RET KMW antenna
- (2) (E) RRUS11

Final Gamma Sector Antenna Configuration

Rad Center Antenna 120'-0"(N)

- (1) (E) PowerWave 7770 antenna
- (2) (E) LGP21401 TMA
- (1) (E) HPA-65R-BUU-H8 CCI antenna
- (1) (N) RRUS-32
- (1) (N) HPA-65R-BUU-H8 CCI antenna
- (1) (N) RRUS-32 B2
- (1) (E) AM-X-CD-16-65-00T-RET KMW antenna
- (2) (E) RRUS11

Section	4	50.440	50.290	3	50.000	2	19.190	1
Length (ft)								
Number of Sides	18			18			18	
Thickness (in)	0.563			0.500			0.188	
Socket Length (ft)								
Top Dia (in)		48.575						
Bot Dia (in)		61.000						
Grade								
Weight (K)	35.6			16.6			12.1	
								1.1



## DESIGNED APPURTENANCE LOADING

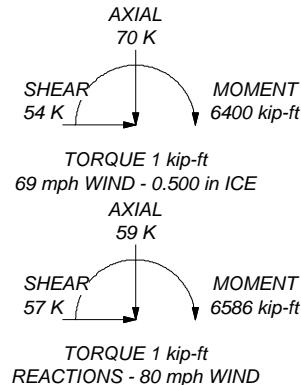
TYPE	ELEVATION	TYPE	ELEVATION
EEI Pine Branches	152	BXA-70063-8BF	132
10ft Dipole	152	BXA-70063/6CF	132
(2) 72"x6.5"x8" Panel	152	LPA-80080-4CF	132
(2) 72"x6.5"x8" Panel	152	EEI 10" Universal T-arm	132
(2) 72"x6.5"x8" Panel	152	EEI 10" Universal T-arm	132
APXVSPP18-C-A20	152	EEI 10" Universal T-arm	132
APXVSPP18-C-A20	152	EEI Pine Branches	122
APXVSPP18-C-A20	152	7770 Power	120.03
FD-RRH-2X50-800	152	7770 Power	120.03
FD-RRH-2X50-800	152	7770 Power	120.03
FD-RRH-2X50-800	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	(2) RRUS 11	120.03
EEI Pine Branches	142	(2) RRUS 11	120.03
53"X7"X3" PANEL	142	(2) RRUS 11	120.03
53"X7"X3" PANEL	142	HPA-65R-BBU-H6	120.03
53"X7"X3" PANEL	142	HPA-65R-BBU-H6	120.03
TMA 10"X8"X3"	142	HPA-65R-BBU-H8	120.03
TMA 10"X8"X3"	142	RRUS-32	120.03
TMA 10"X8"X3"	142	RRUS-32	120.03
EEI 10" Universal T-arm	142	RRUS-32	120.03
EEI 10" Universal T-arm	142	HPA-65R-BBU-H6	120.03
EEI 10" Universal T-arm	142	HPA-65R-BBU-H6	120.03
EEI Pine Branches	132	HPA-65R-BBU-H8	120.03
LPA-80080-4CF	132	RRUS-32 B2	120.03
BXA-70063-8BF	132	RRUS-32 B2	120.03
BXA-70063/6CF	132	RRUS-32 B2	120.03
LPA-80080-4CF	132	(2) DC6-48-60-18-8F	120.03
LPA-80080-4CF	132	EEI Pine Branches	112
BXA-70063-8BF	132	EEI Pine Branches	102
BXA-70063/6CF	132	EEI Pine Branches	92
LPA-80080-4CF	132	EEI Pine Branches	82
LPA-80080-4CF	132		

## MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

## TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 60 mph wind.
4. TOWER RATING: 97.2%



Job: CT2001		
Project: 154FT MONOPINE		
Client: COMEX	Drawn by: Samuel Gonzalez	App'd:
Code: TIA/EIA-222-F	Date: 02/21/17	Scale: NTS
Path:	Dwg No. E-1	
Consulting Engineers	Phone: FAX:	

<b><i>tnxTower</i></b>  <i>Phone:</i> <i>FAX:</i>	<b>Job</b> CT2001	<b>Page</b> 1 of 14
	<b>Project</b> 154FT MONOPINE	<b>Date</b> 17:46:09 02/21/17
	<b>Client</b> COMEX	<b>Designed by</b> Samuel Gonzalez

## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Basic wind speed of 80 mph.

Nominal ice thickness of 0.500 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 15 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	154.000-134.81 0	19.190	4.330	18	25.250	30.030	0.188	0.750	A572-65 (65 ksi)
L2	134.810-89.140	50.000	5.670	18	28.576	40.910	0.313	1.250	A572-65 (65 ksi)
L3	89.140-44.520	50.290	6.920	18	38.886	51.280	0.500	2.000	A572-65 (65 ksi)
L4	44.520-1.000	50.440		18	48.575	61.000	0.563	2.250	A572-65 (65 ksi)

## Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	25.640	14.915	1183.638	8.897	12.827	92.277	2368.833	7.459	4.114	21.941
	30.493	17.760	1998.257	10.594	15.255	130.988	3999.143	8.882	4.955	26.428
L2	30.102	28.034	2829.391	10.034	14.517	194.904	5662.504	14.020	4.479	14.334
	41.541	40.268	8384.791	14.412	20.782	403.459	16780.616	20.138	6.650	21.281
L3	40.905	60.919	11340.852	13.627	19.754	574.096	22696.627	30.465	5.964	11.928
	52.071	80.588	26253.818	18.027	26.050	1007.815	52542.181	40.302	8.145	16.291
L4	51.055	85.720	24964.300	17.044	24.676	1011.687	49961.448	42.868	7.559	13.438
	61.941	107.904	49795.073	21.455	30.988	1606.915	99655.668	53.962	9.746	17.326

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1							1	1	1

<b><i>tnxTower</i></b>  Phone: FAX:	Job CT2001	Page 2 of 14
	Project 154FT MONOPINE	Date 17:46:09 02/21/17
	Client COMEX	Designed by Samuel Gonzalez

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_f$	Adjust. Factor $A_r$	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
154.000-134.8									
10									
L2				1	1	1			
134.810-89.14									
0									
L3				1	1	1			
89.140-44.520									
L4				1	1	1			
44.520-1.000									

## Monopole Base Plate Data

### Base Plate Data

Base plate is square	✓
Base plate is grouted	
Anchor bolt grade	A615
Anchor bolt size	2.250 in
Number of bolts	28
Embedment length	72.000 in
$f_c$	4.000 ksi
Grout space	3.000 in
Base plate grade	A572-60
Base plate thickness	3.000 in
Bolt circle diameter	68.000 in
Outer diameter	74.000 in
Inner diameter	54.000 in
Base plate type	Plain Plate

## Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	$C_A A_A$	Weight klf
1-5/8" Coax Cable	B	No	Inside Pole	121.000 - 6.000	12	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
RET Cable	B	No	Inside Pole	121.000 - 6.000	1	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
DC Trunk Cable	B	No	Inside Pole	121.000 - 6.000	4	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
Fiber Trunk	B	No	Inside Pole	121.000 - 6.000	2	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF5-50A (7/8")	B	No	Inside Pole	153.000 - 6.000	1	No Ice 0.000 1/2" Ice 0.000	0.000 0.000
LDF7-50A (1-5/8")	B	No	Inside Pole	153.000 - 6.000	9	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF7-50A (1-5/8")	B	No	Inside Pole	143.000 - 6.000	6	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF7-50A (1-5/8")	B	No	Inside Pole	133.000 - 6.000	12	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF6-50A (1-1/4")	B	No	Inside Pole	153.000 - 6.000	3	No Ice 0.000 1/2" Ice 0.000	0.001 0.001

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### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
			ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	154.000-134.810	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.217
		C	0.000	0.000	0.000	0.000	0.000
L2	134.810-89.140	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.635
		C	0.000	0.000	0.000	0.000	0.000
L3	89.140-44.520	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.842
		C	0.000	0.000	0.000	0.000	0.000
L4	44.520-1.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.590
		C	0.000	0.000	0.000	0.000	0.000

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
			in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	154.000-134.810	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	0.217
		C	0.000	0.000	0.000	0.000	0.000	0.000
L2	134.810-89.140	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.635
		C	0.000	0.000	0.000	0.000	0.000	0.000
L3	89.140-44.520	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.842
		C	0.000	0.000	0.000	0.000	0.000	0.000
L4	44.520-1.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.590
		C	0.000	0.000	0.000	0.000	0.000	0.000

### Feed Line Center of Pressure

Section	Elevation	$CP_X$	$CP_Z$	$CP_X$ Ice	$CP_Z$ Ice
	ft	in	in	in	in
L1	154.000-134.810	0.000	0.000	0.000	0.000
L2	134.810-89.140	0.000	0.000	0.000	0.000
L3	89.140-44.520	0.000	0.000	0.000	0.000
L4	44.520-1.000	0.000	0.000	0.000	0.000

### Discrete Tower Loads

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
EEI Pine Branches	C	None		0.000	152.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	142.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	132.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	122.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	112.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	102.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	92.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	82.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
10ft Dipole	A	From Face	2.000 0.000 5.000	0.000	152.000	No Ice 1/2" Ice	4.000 6.000	4.000 6.000
(2) 72"x6.5"x8" Panel	A	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
(2) 72"x6.5"x8" Panel	B	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
(2) 72"x6.5"x8" Panel	C	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
APXVSPP18-C-A20	A	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
APXVSPP18-C-A20	B	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
APXVSPP18-C-A20	C	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
FD-RRH-2X50-800	A	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-800	B	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-800	C	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-1900	A	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
FD-RRH-2X50-1900	B	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
FD-RRH-2X50-1900	C	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
EEI 10" Universal T-arm	A	None		0.000	152.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	152.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	152.000	No Ice	13.340	13.400

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
53"X7"X3" PANEL	A	From Leg	3.000 -6.000 0.000	0.000	142.000	1/2" Ice No Ice 1/2" Ice	16.800 3.510 3.850	16.800 2.000 2.330
53"X7"X3" PANEL	B	From Leg	3.000 -6.000 0.000	0.000	142.000	No Ice 1/2" Ice	3.510 3.850	2.000 2.330
53"X7"X3" PANEL	C	From Leg	3.000 -6.000 0.000	0.000	142.000	No Ice 1/2" Ice	3.510 3.850	2.000 2.330
TMA 10"X8"X3"	A	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
TMA 10"X8"X3"	B	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
TMA 10"X8"X3"	C	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
EEI 10" Universal T-arm	A	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
LPA-80080-4CF	A	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	A	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	A	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	A	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
LPA-80080-4CF	B	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	B	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	B	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	B	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
LPA-80080-4CF	C	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	C	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	C	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	C	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
EEI 10" Universal T-arm	A	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
7770 Power	A	From Face	3.000 6.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
7770 Power	B	From Face	0.000 3.000 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270
7770 Power	C	From Face	3.000 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270
(2) LGP 21401 TMA	A	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
(2) LGP 21401 TMA	B	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
(2) LGP 21401 TMA	C	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
AM-X-CD-16-65-00T-RET	A	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
AM-X-CD-16-65-00T-RET	B	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
AM-X-CD-16-65-00T-RET	C	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
(2) RRUS 11	A	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
(2) RRUS 11	B	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
(2) RRUS 11	C	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
HPA-65R-BBU-H6	A	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H6	B	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H8	C	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	12.970 14.000	7.520 8.620
RRUS-32	A	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
RRUS-32	B	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
RRUS-32	C	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
HPA-65R-BBU-H6	A	From Face	3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H6	B	From Face	3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight
HPA-65R-BBU-H8	C	From Face	0.000 3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	12.970 14.000	7.520 8.620
RRUS-32 B2	A	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
RRUS-32 B2	B	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
RRUS-32 B2	C	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
(2) DC6-48-60-18-8F	A	From Leg	0.500 0.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.230 2.450	2.230 2.450

## Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service

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Comb. No.	Description
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	154 - 134.81	Pole	Max Tension	21	0.000	-0.001	0.001
			Max. Compression	14	-9.991	0.186	0.108
			Max. Mx	11	-5.829	141.631	0.055
			Max. My	2	-5.825	0.095	141.587
			Max. Vy	11	-16.166	141.631	0.055
			Max. Vx	2	-16.167	0.095	141.587
			Max. Torque	22			-0.603
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.166	0.246	-0.024
			Max. Mx	11	-20.330	1559.711	0.035
L2	134.81 - 89.14	Pole	Max. My	2	-20.309	0.123	1564.285
			Max. Vy	11	-43.758	1559.711	0.035
			Max. Vx	2	-43.941	0.123	1564.285
			Max. Torque	22			-0.603
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-47.931	0.246	-0.024
			Max. Mx	11	-37.121	3771.768	0.041
			Max. My	2	-37.109	0.136	3784.320
			Max. Vy	11	-53.781	3771.768	0.041
			Max. Vx	2	-53.965	0.136	3784.320
L3	89.14 - 44.52	Pole	Max. Torque	16			0.563
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-70.015	0.246	-0.024
			Max. Mx	11	-59.245	6564.018	0.042
			Max. My	2	-59.245	0.137	6585.748
			Max. Vy	11	-56.770	6564.018	0.042
			Max. Vx	2	-56.950	0.137	6585.748
			Max. Torque	16			0.562

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	70.015	0.000	54.191
	Max. H <sub>x</sub>	11	59.288	56.726	0.000
	Max. H <sub>z</sub>	2	59.288	0.000	56.905
	Max. M <sub>x</sub>	2	6585.748	0.000	56.905
	Max. M <sub>z</sub>	5	6563.740	-56.726	0.000
	Max. Torsion	16	0.561	-27.029	46.930
	Min. Vert	1	59.288	0.000	0.000

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H <sub>x</sub>	5	59.288	-56.726	0.000
	Min. H <sub>z</sub>	8	59.288	0.000	-56.905
	Min. M <sub>x</sub>	8	-6585.662	0.000	-56.905
	Min. M <sub>z</sub>	11	-6564.018	56.726	0.000
	Min. Torsion	22	-0.560	27.029	-46.930

### Tower Mast Reaction Summary

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overswing Moment, M <sub>x</sub>	Overswing Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	59.288	0.000	0.000	-0.041	0.133	0.000
Dead+Wind 0 deg - No Ice	59.288	-0.000	-56.905	-6585.748	0.137	-0.460
Dead+Wind 30 deg - No Ice	59.288	28.363	-49.281	-5703.445	-3281.784	-0.513
Dead+Wind 60 deg - No Ice	59.288	49.126	-28.453	-3292.917	-5684.340	-0.428
Dead+Wind 90 deg - No Ice	59.288	56.726	0.000	-0.042	-6563.740	-0.228
Dead+Wind 120 deg - No Ice	59.288	49.126	28.453	3292.832	-5684.339	0.033
Dead+Wind 150 deg - No Ice	59.288	28.363	49.281	5703.360	-3281.783	0.285
Dead+Wind 180 deg - No Ice	59.288	-0.000	56.905	6585.662	0.137	0.460
Dead+Wind 210 deg - No Ice	59.288	-28.363	49.281	5703.362	3282.058	0.511
Dead+Wind 240 deg - No Ice	59.288	-49.126	28.453	3292.834	5684.616	0.426
Dead+Wind 270 deg - No Ice	59.288	-56.726	0.000	-0.042	6564.018	0.228
Dead+Wind 300 deg - No Ice	59.288	-49.126	-28.453	-3292.918	5684.617	-0.031
Dead+Wind 330 deg - No Ice	59.288	-28.363	-49.281	-5703.447	3282.059	-0.283
Dead+Ice+Temp	70.015	0.000	0.000	0.024	0.246	0.000
Dead+Wind 0 deg+Ice+Temp	70.015	0.000	-54.191	-6400.123	0.259	-0.517
Dead+Wind 30 deg+Ice+Temp	70.015	27.029	-46.930	-5542.684	-3191.710	-0.561
Dead+Wind 60 deg+Ice+Temp	70.015	46.816	-27.095	-3200.068	-5528.408	-0.455
Dead+Wind 90 deg+Ice+Temp	70.015	54.058	0.000	0.027	-6383.692	-0.226
Dead+Wind 120 deg+Ice+Temp	70.015	46.816	27.095	3200.120	-5528.406	0.063
Dead+Wind 150 deg+Ice+Temp	70.015	27.029	46.930	5542.734	-3191.708	0.335
Dead+Wind 180 deg+Ice+Temp	70.015	0.000	54.191	6400.173	0.259	0.517
Dead+Wind 210 deg+Ice+Temp	70.015	-27.029	46.930	5542.736	3192.226	0.560
Dead+Wind 240 deg+Ice+Temp	70.015	-46.816	27.095	3200.122	5528.927	0.454
Dead+Wind 270 deg+Ice+Temp	70.015	-54.058	0.000	0.027	6384.214	0.226
Dead+Wind 300 deg+Ice+Temp	70.015	-46.816	-27.095	-3200.070	5528.929	-0.062
Dead+Wind 330 deg+Ice+Temp	70.015	-27.029	-46.930	-5542.686	3192.228	-0.334
Dead+Wind 0 deg - Service	59.288	0.000	-32.009	-3707.913	0.139	-0.261
Dead+Wind 30 deg - Service	59.288	15.954	-27.721	-3211.157	-1847.639	-0.291
Dead+Wind 60 deg - Service	59.288	27.633	-16.005	-1853.983	-3200.311	-0.243
Dead+Wind 90 deg - Service	59.288	31.908	0.000	-0.043	-3695.422	-0.129
Dead+Wind 120 deg - Service	59.288	27.633	16.005	1853.897	-3200.311	0.019
Dead+Wind 150 deg - Service	59.288	15.954	27.721	3211.071	-1847.639	0.161
Dead+Wind 180 deg - Service	59.288	0.000	32.009	3707.827	0.139	0.261
Dead+Wind 210 deg - Service	59.288	-15.954	27.721	3211.072	1847.918	0.290
Dead+Wind 240 deg - Service	59.288	-27.633	16.005	1853.898	3200.590	0.242
Dead+Wind 270 deg - Service	59.288	-31.908	0.000	-0.043	3695.702	0.129
Dead+Wind 300 deg - Service	59.288	-27.633	-16.005	-1853.983	3200.591	-0.018
Dead+Wind 330 deg - Service	59.288	-15.954	-27.721	-3211.158	1847.918	-0.161

### Solution Summary

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	Client COMEX	Designed by Samuel Gonzalez

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-59.288	0.000	0.000	59.288	0.000	0.000%
2	0.000	-59.288	-56.905	0.000	59.288	56.905	0.000%
3	28.363	-59.288	-49.281	-28.363	59.288	49.281	0.000%
4	49.126	-59.288	-28.453	-49.126	59.288	28.453	0.000%
5	56.726	-59.288	0.000	-56.726	59.288	0.000	0.000%
6	49.126	-59.288	28.453	-49.126	59.288	-28.453	0.000%
7	28.363	-59.288	49.281	-28.363	59.288	-49.281	0.000%
8	0.000	-59.288	56.905	0.000	59.288	-56.905	0.000%
9	-28.363	-59.288	49.281	28.363	59.288	-49.281	0.000%
10	-49.126	-59.288	28.453	49.126	59.288	-28.453	0.000%
11	-56.726	-59.288	0.000	56.726	59.288	0.000	0.000%
12	-49.126	-59.288	-28.453	49.126	59.288	28.453	0.000%
13	-28.363	-59.288	-49.281	28.363	59.288	49.281	0.000%
14	0.000	-70.015	0.000	0.000	70.015	0.000	0.000%
15	0.000	-70.015	-54.190	0.000	70.015	54.191	0.000%
16	27.029	-70.015	-46.930	-27.029	70.015	46.930	0.000%
17	46.816	-70.015	-27.095	-46.816	70.015	27.095	0.000%
18	54.058	-70.015	0.000	-54.058	70.015	0.000	0.000%
19	46.816	-70.015	27.095	-46.816	70.015	-27.095	0.000%
20	27.029	-70.015	46.930	-27.029	70.015	-46.930	0.000%
21	0.000	-70.015	54.190	0.000	70.015	-54.191	0.000%
22	-27.029	-70.015	46.930	27.029	70.015	-46.930	0.000%
23	-46.816	-70.015	27.095	46.816	70.015	-27.095	0.000%
24	-54.058	-70.015	0.000	-54.058	70.015	0.000	0.000%
25	-46.816	-70.015	-27.095	46.816	70.015	27.095	0.000%
26	-27.029	-70.015	-46.930	27.029	70.015	46.930	0.000%
27	0.000	-59.288	-32.009	0.000	59.288	32.009	0.000%
28	15.954	-59.288	-27.721	-15.954	59.288	27.721	0.000%
29	27.633	-59.288	-16.005	-27.633	59.288	16.005	0.000%
30	31.908	-59.288	0.000	-31.908	59.288	0.000	0.000%
31	27.633	-59.288	16.005	-27.633	59.288	-16.005	0.000%
32	15.954	-59.288	27.721	-15.954	59.288	-27.721	0.000%
33	0.000	-59.288	32.009	0.000	59.288	-32.009	0.000%
34	-15.954	-59.288	27.721	15.954	59.288	-27.721	0.000%
35	-27.633	-59.288	16.005	27.633	59.288	-16.005	0.000%
36	-31.908	-59.288	0.000	31.908	59.288	0.000	0.000%
37	-27.633	-59.288	-16.005	27.633	59.288	16.005	0.000%
38	-15.954	-59.288	-27.721	15.954	59.288	27.721	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00014830
3	Yes	5	0.00000001	0.00028864
4	Yes	5	0.00000001	0.00029348
5	Yes	4	0.00000001	0.00009349
6	Yes	5	0.00000001	0.00029133
7	Yes	5	0.00000001	0.00028981
8	Yes	4	0.00000001	0.00014830
9	Yes	5	0.00000001	0.00029387
10	Yes	5	0.00000001	0.00028914
11	Yes	4	0.00000001	0.00009349
12	Yes	5	0.00000001	0.00029125
13	Yes	5	0.00000001	0.00029266

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	<b>Client</b> COMEX	<b>Designed by</b> Samuel Gonzalez

14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00094315
16	Yes	5	0.00000001	0.00065143
17	Yes	5	0.00000001	0.00066193
18	Yes	4	0.00000001	0.00091755
19	Yes	5	0.00000001	0.00065742
20	Yes	5	0.00000001	0.00065388
21	Yes	4	0.00000001	0.00094314
22	Yes	5	0.00000001	0.00066313
23	Yes	5	0.00000001	0.00065266
24	Yes	4	0.00000001	0.00091767
25	Yes	5	0.00000001	0.00065706
26	Yes	5	0.00000001	0.00066057
27	Yes	4	0.00000001	0.00008166
28	Yes	5	0.00000001	0.00009622
29	Yes	5	0.00000001	0.00009834
30	Yes	4	0.00000001	0.00006075
31	Yes	5	0.00000001	0.00009735
32	Yes	5	0.00000001	0.00009674
33	Yes	4	0.00000001	0.00008166
34	Yes	5	0.00000001	0.00009861
35	Yes	5	0.00000001	0.00009639
36	Yes	4	0.00000001	0.00006075
37	Yes	5	0.00000001	0.00009735
38	Yes	5	0.00000001	0.00009807

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	154 - 134.81	55.144	27	3.134	0.002
L2	139.14 - 89.14	45.472	27	3.052	0.001
L3	94.81 - 44.52	20.621	27	2.095	0.000
L4	51.44 - 1	5.910	27	1.075	0.000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.000	EEI Pine Branches	27	53.830	3.127	0.002	14190
142.000	EEI Pine Branches	27	47.307	3.077	0.002	5931
132.000	EEI Pine Branches	27	40.982	2.961	0.001	4015
122.000	EEI Pine Branches	27	34.956	2.775	0.001	3281
120.030	7770 Power	27	33.810	2.732	0.001	3167
112.000	EEI Pine Branches	27	29.297	2.542	0.001	2773
102.000	EEI Pine Branches	27	24.072	2.283	0.000	2401
92.000	EEI Pine Branches	27	19.348	2.023	0.000	2182
82.000	EEI Pine Branches	27	15.172	1.775	0.000	2149

### Maximum Tower Deflections - Design Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	154 - 134.81	97.813	2	5.561	0.004
L2	139.14 - 89.14	80.669	2	5.415	0.003
L3	94.81 - 44.52	36.604	2	3.719	0.001
L4	51.44 - 1	10.494	2	1.909	0.000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.000	EEI Pine Branches	2	95.484	5.549	0.004	8115
142.000	EEI Pine Branches	2	83.923	5.459	0.003	3391
132.000	EEI Pine Branches	2	72.710	5.254	0.002	2292
122.000	EEI Pine Branches	2	62.026	4.924	0.001	1870
120.030	7770 Power	2	59.994	4.848	0.001	1804
112.000	EEI Pine Branches	2	51.992	4.511	0.001	1578
102.000	EEI Pine Branches	2	42.725	4.053	0.001	1364
92.000	EEI Pine Branches	2	34.345	3.591	0.001	1238
82.000	EEI Pine Branches	2	26.935	3.151	0.001	1217

### Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stiffener Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
3.000	28	2.250	135.010 118.090 1.14	2.832 2.800 1.01	46.028 45.000 1.02		Bolt T	1.14 ✓

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	19.190	0.000	0.0	38.627	17.118	-5.828	661.218	0.009
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	50.000	0.000	0.0	39.000	38.880	-20.309	1516.340	0.013
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	50.290	0.000	0.0	39.000	77.881	-37.109	3037.380	0.012
L4	44.52 - 1 (4)	TP61x48.575x0.563	50.440	0.000	0.0	39.000	107.904	-59.245	4208.240	0.014

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Section No.	Elevation	Size	L	L <sub>a</sub>	Kl/r	F <sub>a</sub>	A	Actual P	Allow. P <sub>a</sub>	Ratio P/P <sub>a</sub>
			ft	ft		ksi	in <sup>2</sup>	K	K	

### Pole Bending Design Data

Section No.	Elevation	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> /F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> /F <sub>by</sub>
	ft									
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	141.655	13.972	38.627	0.362	0.000	0.000	38.627	0.000
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	1564.28 3	49.919	39.000	1.280	0.000	0.000	39.000	0.000
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	3784.31 7	48.262	39.000	1.237	0.000	0.000	39.000	0.000
L4	44.52 - 1 (4)	TP61x48.575x0.563	6585.75 0	49.181	39.000	1.261	0.000	0.000	39.000	0.000

### Pole Shear Design Data

Section No.	Elevation	Size	Actual V K	Actual f <sub>v</sub> ksi	Allow. F <sub>v</sub> ksi	Ratio f <sub>v</sub> /F <sub>v</sub>	Actual T kip-ft	Actual f <sub>vt</sub> ksi	Allow. F <sub>vt</sub> ksi	Ratio f <sub>vt</sub> /F <sub>vt</sub>
	ft									
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	16.166	0.944	26.000	0.073	0.000	0.000	26.000	0.000
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	43.941	1.130	26.000	0.087	0.462	0.007	26.000	0.000
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	53.965	0.693	26.000	0.053	0.460	0.003	26.000	0.000
L4	44.52 - 1 (4)	TP61x48.575x0.563	56.950	0.528	26.000	0.041	0.460	0.002	26.000	0.000

### Pole Interaction Design Data

Section No.	Elevation	Ratio P P <sub>a</sub>	Ratio f <sub>bx</sub> F <sub>bx</sub>	Ratio f <sub>by</sub> F <sub>by</sub>	Ratio f <sub>v</sub> F <sub>v</sub>	Ratio f <sub>vt</sub> F <sub>vt</sub>	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft								
L1	154 - 134.81 (1)	0.009	0.362	0.000	0.073	0.000	0.372	1.333	H1-3+VT ✓
L2	134.81 - 89.14 (2)	0.013	1.280	0.000	0.087	0.000	1.295	1.333	H1-3+VT ✓
L3	89.14 - 44.52 (3)	0.012	1.237	0.000	0.053	0.000	1.250	1.333	H1-3+VT ✓
L4	44.52 - 1 (4)	0.014	1.261	0.000	0.041	0.000	1.276	1.333	H1-3+VT ✓

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	<b>Project</b> 154FT MONOPINE	<b>Date</b> 17:46:09 02/21/17
	<b>Client</b> COMEX	<b>Designed by</b> Samuel Gonzalez

## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail	
L1	154 - 134.81	Pole	TP30.03x25.25x0.188	1	-5.828	881.404	27.9	Pass	
L2	134.81 - 89.14	Pole	TP40.91x28.576x0.313	2	-20.309	2021.281	97.2	Pass	
L3	89.14 - 44.52	Pole	TP51.28x38.886x0.5	3	-37.109	4048.827	93.8	Pass	
L4	44.52 - 1	Pole	TP61x48.575x0.563	4	-59.245	5609.584	95.7	Pass	
							Summary		
							Pole (L2)	97.2	Pass
							Base Plate	85.8	Pass
							<b>RATING =</b>	<b>97.2</b>	<b>Pass</b>

Program Version 7.0.7.0 - 7/18/2016 File:D:/SZS Engineering/COMEX/KEITH/16035 CT2001 - 2-8-17 - Monpine - 2 Hours/DATA/CT2001 Self Standing Tower.eri

Section	4	50.440	50.290	3	50.000	2	19.190	1
Length (ft)								
Number of Sides	18			18			18	
Thickness (in)	0.563			0.500			0.188	
Socket Length (ft)								
Top Dia (in)		48.575						
Bot Dia (in)		61.000						
Grade								
Weight (K)	35.6			16.6			12.1	
								1.1



## DESIGNED APPURTENANCE LOADING

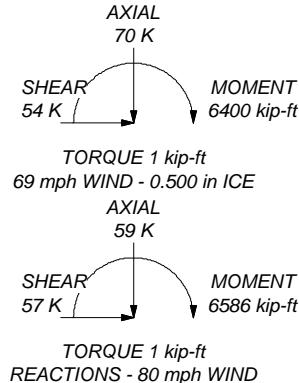
TYPE	ELEVATION	TYPE	ELEVATION
EEI Pine Branches	152	BXA-70063-8BF	132
10ft Dipole	152	BXA-70063/6CF	132
(2) 72"x6.5"x8" Panel	152	LPA-80080-4CF	132
(2) 72"x6.5"x8" Panel	152	EEI 10" Universal T-arm	132
(2) 72"x6.5"x8" Panel	152	EEI 10" Universal T-arm	132
APXVSPP18-C-A20	152	EEI 10" Universal T-arm	132
APXVSPP18-C-A20	152	EEI Pine Branches	122
APXVSPP18-C-A20	152	7770 Power	120.03
FD-RRH-2X50-800	152	7770 Power	120.03
FD-RRH-2X50-800	152	7770 Power	120.03
FD-RRH-2X50-800	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	(2) LGP 21401 TMA	120.03
FD-RRH-2X50-1900	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	AM-X-CD-16-65-00T-RET	120.03
EEI 10" Universal T-arm	152	(2) RRUS 11	120.03
EEI Pine Branches	142	(2) RRUS 11	120.03
53"X7"X3" PANEL	142	(2) RRUS 11	120.03
53"X7"X3" PANEL	142	HPA-65R-BBU-H6	120.03
53"X7"X3" PANEL	142	HPA-65R-BBU-H6	120.03
TMA 10"X8"X3"	142	HPA-65R-BBU-H8	120.03
TMA 10"X8"X3"	142	RRUS-32	120.03
TMA 10"X8"X3"	142	RRUS-32	120.03
EEI 10" Universal T-arm	142	RRUS-32	120.03
EEI 10" Universal T-arm	142	HPA-65R-BBU-H6	120.03
EEI 10" Universal T-arm	142	HPA-65R-BBU-H6	120.03
EEI Pine Branches	132	HPA-65R-BBU-H8	120.03
LPA-80080-4CF	132	RRUS-32 B2	120.03
BXA-70063-8BF	132	RRUS-32 B2	120.03
BXA-70063/6CF	132	RRUS-32 B2	120.03
LPA-80080-4CF	132	(2) DC6-48-60-18-8F	120.03
LPA-80080-4CF	132	EEI Pine Branches	112
BXA-70063-8BF	132	EEI Pine Branches	102
BXA-70063/6CF	132	EEI Pine Branches	92
LPA-80080-4CF	132	EEI Pine Branches	82
LPA-80080-4CF	132		

## MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

## TOWER DESIGN NOTES

1. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 60 mph wind.
4. TOWER RATING: 97.2%



Job: CT2001		
Project: 154FT MONOPINE		
Client: COMEX	Drawn by: Samuel Gonzalez	App'd:
Code: TIA/EIA-222-F	Date: 02/21/17	Scale: NTS
Path: D:\Z25\Engineering\COMEX\KEITH\16038 CT2001-2-8-17 - Monopine - 2 Hours\DATA\CT2001 Self Standing Tower.dwg	Dwg No: E-1	

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	<b>Project</b> 154FT MONOPINE	<b>Date</b> 17:46:09 02/21/17
	<b>Client</b> COMEX	<b>Designed by</b> Samuel Gonzalez

## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Basic wind speed of 80 mph.

Nominal ice thickness of 0.500 in.

Ice density of 56 pcf.

A wind speed of 69 mph is used in combination with ice.

Temperature drop of 15 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	154.000-134.81 0	19.190	4.330	18	25.250	30.030	0.188	0.750	A572-65 (65 ksi)
L2	134.810-89.140	50.000	5.670	18	28.576	40.910	0.313	1.250	A572-65 (65 ksi)
L3	89.140-44.520	50.290	6.920	18	38.886	51.280	0.500	2.000	A572-65 (65 ksi)
L4	44.520-1.000	50.440		18	48.575	61.000	0.563	2.250	A572-65 (65 ksi)

## Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	25.640	14.915	1183.638	8.897	12.827	92.277	2368.833	7.459	4.114	21.941
	30.493	17.760	1998.257	10.594	15.255	130.988	3999.143	8.882	4.955	26.428
L2	30.102	28.034	2829.391	10.034	14.517	194.904	5662.504	14.020	4.479	14.334
	41.541	40.268	8384.791	14.412	20.782	403.459	16780.616	20.138	6.650	21.281
L3	40.905	60.919	11340.852	13.627	19.754	574.096	22696.627	30.465	5.964	11.928
	52.071	80.588	26253.818	18.027	26.050	1007.815	52542.181	40.302	8.145	16.291
L4	51.055	85.720	24964.300	17.044	24.676	1011.687	49961.448	42.868	7.559	13.438
	61.941	107.904	49795.073	21.455	30.988	1606.915	99655.668	53.962	9.746	17.326

Tower Elevation ft	Gusset Area (per face) ft <sup>2</sup>	Gusset Thickness in	Gusset Grade	Adjust. Factor A <sub>f</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1							1	1	1

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_f$	Adjust. Factor $A_r$	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft <sup>2</sup>	in							
154.000-134.8									
10									
L2				1	1	1			
134.810-89.14									
0									
L3				1	1	1			
89.140-44.520									
L4				1	1	1			
44.520-1.000									

## Monopole Base Plate Data

### Base Plate Data

Base plate is square	✓
Base plate is grouted	
Anchor bolt grade	A615
Anchor bolt size	2.250 in
Number of bolts	28
Embedment length	72.000 in
$f_c$	4.000 ksi
Grout space	3.000 in
Base plate grade	A572-60
Base plate thickness	3.000 in
Bolt circle diameter	68.000 in
Outer diameter	74.000 in
Inner diameter	54.000 in
Base plate type	Plain Plate

## Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	$C_A A_A$	Weight klf
1-5/8" Coax Cable	B	No	Inside Pole	121.000 - 6.000	12	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
RET Cable	B	No	Inside Pole	121.000 - 6.000	1	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
DC Trunk Cable	B	No	Inside Pole	121.000 - 6.000	4	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
Fiber Trunk	B	No	Inside Pole	121.000 - 6.000	2	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF5-50A (7/8")	B	No	Inside Pole	153.000 - 6.000	1	No Ice 0.000 1/2" Ice 0.000	0.000 0.000
LDF7-50A (1-5/8")	B	No	Inside Pole	153.000 - 6.000	9	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF7-50A (1-5/8")	B	No	Inside Pole	143.000 - 6.000	6	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF7-50A (1-5/8")	B	No	Inside Pole	133.000 - 6.000	12	No Ice 0.000 1/2" Ice 0.000	0.001 0.001
LDF6-50A (1-1/4")	B	No	Inside Pole	153.000 - 6.000	3	No Ice 0.000 1/2" Ice 0.000	0.001 0.001

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### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
			ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	154.000-134.810	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.217
		C	0.000	0.000	0.000	0.000	0.000
L2	134.810-89.140	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.635
		C	0.000	0.000	0.000	0.000	0.000
L3	89.140-44.520	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.842
		C	0.000	0.000	0.000	0.000	0.000
L4	44.520-1.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	1.590
		C	0.000	0.000	0.000	0.000	0.000

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	$A_R$	$A_F$	$C_{AA}$ In Face	$C_{AA}$ Out Face	Weight
			in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	154.000-134.810	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	0.217
		C	0.000	0.000	0.000	0.000	0.000	0.000
L2	134.810-89.140	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.635
		C	0.000	0.000	0.000	0.000	0.000	0.000
L3	89.140-44.520	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.842
		C	0.000	0.000	0.000	0.000	0.000	0.000
L4	44.520-1.000	A	0.500	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000	1.590
		C	0.000	0.000	0.000	0.000	0.000	0.000

### Feed Line Center of Pressure

Section	Elevation	$CP_X$	$CP_Z$	$CP_X$ Ice	$CP_Z$ Ice
	ft	in	in	in	in
L1	154.000-134.810	0.000	0.000	0.000	0.000
L2	134.810-89.140	0.000	0.000	0.000	0.000
L3	89.140-44.520	0.000	0.000	0.000	0.000
L4	44.520-1.000	0.000	0.000	0.000	0.000

### Discrete Tower Loads

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
EEI Pine Branches	C	None		0.000	152.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	142.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	132.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	122.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	112.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	102.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	92.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
EEI Pine Branches	C	None		0.000	82.000	No Ice 1/2" Ice	90.000 130.000	90.000 130.000
10ft Dipole	A	From Face	2.000 0.000 5.000	0.000	152.000	No Ice 1/2" Ice	4.000 6.000	4.000 6.000
(2) 72"x6.5"x8" Panel	A	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
(2) 72"x6.5"x8" Panel	B	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
(2) 72"x6.5"x8" Panel	C	From Face	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	5.090 5.550	6.060 6.530
APXVSPP18-C-A20	A	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
APXVSPP18-C-A20	B	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
APXVSPP18-C-A20	C	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	8.260 8.810	5.280 5.740
FD-RRH-2X50-800	A	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-800	B	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-800	C	From Leg	3.000 0.000 0.000	0.000	152.000	No Ice 1/2" Ice	2.480 2.690	2.060 2.260
FD-RRH-2X50-1900	A	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
FD-RRH-2X50-1900	B	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
FD-RRH-2X50-1900	C	None		0.000	152.000	No Ice 1/2" Ice	2.820 3.060	2.820 3.060
EEI 10" Universal T-arm	A	None		0.000	152.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	152.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	152.000	No Ice	13.340	13.400

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
53"X7"X3" PANEL	A	From Leg	3.000 -6.000 0.000	0.000	142.000	1/2" Ice No Ice 1/2" Ice	16.800 3.510 3.850	16.800 2.000 2.330
53"X7"X3" PANEL	B	From Leg	3.000 -6.000 0.000	0.000	142.000	No Ice 1/2" Ice	3.510 3.850	2.000 2.330
53"X7"X3" PANEL	C	From Leg	3.000 -6.000 0.000	0.000	142.000	No Ice 1/2" Ice	3.510 3.850	2.000 2.330
TMA 10"X8"X3"	A	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
TMA 10"X8"X3"	B	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
TMA 10"X8"X3"	C	From Leg	3.000 0.000 0.000	0.000	142.000	No Ice 1/2" Ice	0.780 0.900	0.780 0.900
EEI 10" Universal T-arm	A	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	142.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
LPA-80080-4CF	A	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	A	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	A	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	A	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
LPA-80080-4CF	B	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	B	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	B	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	B	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
LPA-80080-4CF	C	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.460
BXA-70063-8BF	C	None		0.000	132.000	No Ice 1/2" Ice	2.940 3.250	2.160 2.460
BXA-70063/6CF	C	None		0.000	132.000	No Ice 1/2" Ice	7.730 8.270	4.160 4.590
LPA-80080-4CF	C	None		0.000	132.000	No Ice 1/2" Ice	2.620 2.920	6.060 6.450
EEI 10" Universal T-arm	A	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	B	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
EEI 10" Universal T-arm	C	None		0.000	132.000	No Ice 1/2" Ice	13.340 16.800	13.400 16.800
7770 Power	A	From Face	3.000 6.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight K
7770 Power	B	From Face	0.000 3.000 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270
7770 Power	C	From Face	3.000 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	5.880 6.310	2.930 3.270
(2) LGP 21401 TMA	A	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
(2) LGP 21401 TMA	B	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
(2) LGP 21401 TMA	C	From Face	2.500 6.000 0.000	0.000	120.030	No Ice 1/2" Ice	0.950 1.090	0.370 0.480
AM-X-CD-16-65-00T-RET	A	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
AM-X-CD-16-65-00T-RET	B	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
AM-X-CD-16-65-00T-RET	C	From Face	3.000 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	8.260 8.810	4.640 5.090
(2) RRUS 11	A	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
(2) RRUS 11	B	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
(2) RRUS 11	C	From Face	2.500 -6.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.990 3.230	1.250 1.410
HPA-65R-BBU-H6	A	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H6	B	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H8	C	From Face	3.000 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	12.970 14.000	7.520 8.620
RRUS-32	A	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
RRUS-32	B	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
RRUS-32	C	From Leg	2.500 2.000 0.000	0.000	120.030	No Ice 1/2" Ice	3.310 3.870	2.420 2.950
HPA-65R-BBU-H6	A	From Face	3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270
HPA-65R-BBU-H6	B	From Face	3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	9.660 10.450	6.450 7.270

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight
HPA-65R-BBU-H8	C	From Face	0.000 3.000 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	12.970 14.000	7.520 8.620
RRUS-32 B2	A	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
RRUS-32 B2	B	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
RRUS-32 B2	C	From Leg	2.500 -2.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.740 3.080	1.670 1.980
(2) DC6-48-60-18-8F	A	From Leg	0.500 0.000 0.000	0.000	120.030	No Ice 1/2" Ice	2.230 2.450	2.230 2.450

## Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service

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Comb. No.	Description
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	154 - 134.81	Pole	Max Tension	21	0.000	-0.001	0.001
			Max. Compression	14	-9.991	0.186	0.108
			Max. Mx	11	-5.829	141.631	0.055
			Max. My	2	-5.825	0.095	141.587
			Max. Vy	11	-16.166	141.631	0.055
			Max. Vx	2	-16.167	0.095	141.587
			Max. Torque	22			-0.603
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.166	0.246	-0.024
			Max. Mx	11	-20.330	1559.711	0.035
L2	134.81 - 89.14	Pole	Max. My	2	-20.309	0.123	1564.285
			Max. Vy	11	-43.758	1559.711	0.035
			Max. Vx	2	-43.941	0.123	1564.285
			Max. Torque	22			-0.603
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-47.931	0.246	-0.024
			Max. Mx	11	-37.121	3771.768	0.041
			Max. My	2	-37.109	0.136	3784.320
			Max. Vy	11	-53.781	3771.768	0.041
			Max. Vx	2	-53.965	0.136	3784.320
L3	89.14 - 44.52	Pole	Max. Torque	16			0.563
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-70.015	0.246	-0.024
			Max. Mx	11	-59.245	6564.018	0.042
			Max. My	2	-59.245	0.137	6585.748
			Max. Vy	11	-56.770	6564.018	0.042
			Max. Vx	2	-56.950	0.137	6585.748
			Max. Torque	16			0.562

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	70.015	0.000	54.191
	Max. H <sub>x</sub>	11	59.288	56.726	0.000
	Max. H <sub>z</sub>	2	59.288	0.000	56.905
	Max. M <sub>x</sub>	2	6585.748	0.000	56.905
	Max. M <sub>z</sub>	5	6563.740	-56.726	0.000
	Max. Torsion	16	0.561	-27.029	46.930
	Min. Vert	1	59.288	0.000	0.000

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H <sub>x</sub>	5	59.288	-56.726	0.000
	Min. H <sub>z</sub>	8	59.288	0.000	-56.905
	Min. M <sub>x</sub>	8	-6585.662	0.000	-56.905
	Min. M <sub>z</sub>	11	-6564.018	56.726	0.000
	Min. Torsion	22	-0.560	27.029	-46.930

### Tower Mast Reaction Summary

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overswing Moment, M <sub>x</sub>	Overswing Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	59.288	0.000	0.000	-0.041	0.133	0.000
Dead+Wind 0 deg - No Ice	59.288	-0.000	-56.905	-6585.748	0.137	-0.460
Dead+Wind 30 deg - No Ice	59.288	28.363	-49.281	-5703.445	-3281.784	-0.513
Dead+Wind 60 deg - No Ice	59.288	49.126	-28.453	-3292.917	-5684.340	-0.428
Dead+Wind 90 deg - No Ice	59.288	56.726	0.000	-0.042	-6563.740	-0.228
Dead+Wind 120 deg - No Ice	59.288	49.126	28.453	3292.832	-5684.339	0.033
Dead+Wind 150 deg - No Ice	59.288	28.363	49.281	5703.360	-3281.783	0.285
Dead+Wind 180 deg - No Ice	59.288	-0.000	56.905	6585.662	0.137	0.460
Dead+Wind 210 deg - No Ice	59.288	-28.363	49.281	5703.362	3282.058	0.511
Dead+Wind 240 deg - No Ice	59.288	-49.126	28.453	3292.834	5684.616	0.426
Dead+Wind 270 deg - No Ice	59.288	-56.726	0.000	-0.042	6564.018	0.228
Dead+Wind 300 deg - No Ice	59.288	-49.126	-28.453	-3292.918	5684.617	-0.031
Dead+Wind 330 deg - No Ice	59.288	-28.363	-49.281	-5703.447	3282.059	-0.283
Dead+Ice+Temp	70.015	0.000	0.000	0.024	0.246	0.000
Dead+Wind 0 deg+Ice+Temp	70.015	0.000	-54.191	-6400.123	0.259	-0.517
Dead+Wind 30 deg+Ice+Temp	70.015	27.029	-46.930	-5542.684	-3191.710	-0.561
Dead+Wind 60 deg+Ice+Temp	70.015	46.816	-27.095	-3200.068	-5528.408	-0.455
Dead+Wind 90 deg+Ice+Temp	70.015	54.058	0.000	0.027	-6383.692	-0.226
Dead+Wind 120 deg+Ice+Temp	70.015	46.816	27.095	3200.120	-5528.406	0.063
Dead+Wind 150 deg+Ice+Temp	70.015	27.029	46.930	5542.734	-3191.708	0.335
Dead+Wind 180 deg+Ice+Temp	70.015	0.000	54.191	6400.173	0.259	0.517
Dead+Wind 210 deg+Ice+Temp	70.015	-27.029	46.930	5542.736	3192.226	0.560
Dead+Wind 240 deg+Ice+Temp	70.015	-46.816	27.095	3200.122	5528.927	0.454
Dead+Wind 270 deg+Ice+Temp	70.015	-54.058	0.000	0.027	6384.214	0.226
Dead+Wind 300 deg+Ice+Temp	70.015	-46.816	-27.095	-3200.070	5528.929	-0.062
Dead+Wind 330 deg+Ice+Temp	70.015	-27.029	-46.930	-5542.686	3192.228	-0.334
Dead+Wind 0 deg - Service	59.288	0.000	-32.009	-3707.913	0.139	-0.261
Dead+Wind 30 deg - Service	59.288	15.954	-27.721	-3211.157	-1847.639	-0.291
Dead+Wind 60 deg - Service	59.288	27.633	-16.005	-1853.983	-3200.311	-0.243
Dead+Wind 90 deg - Service	59.288	31.908	0.000	-0.043	-3695.422	-0.129
Dead+Wind 120 deg - Service	59.288	27.633	16.005	1853.897	-3200.311	0.019
Dead+Wind 150 deg - Service	59.288	15.954	27.721	3211.071	-1847.639	0.161
Dead+Wind 180 deg - Service	59.288	0.000	32.009	3707.827	0.139	0.261
Dead+Wind 210 deg - Service	59.288	-15.954	27.721	3211.072	1847.918	0.290
Dead+Wind 240 deg - Service	59.288	-27.633	16.005	1853.898	3200.590	0.242
Dead+Wind 270 deg - Service	59.288	-31.908	0.000	-0.043	3695.702	0.129
Dead+Wind 300 deg - Service	59.288	-27.633	-16.005	-1853.983	3200.591	-0.018
Dead+Wind 330 deg - Service	59.288	-15.954	-27.721	-3211.158	1847.918	-0.161

### Solution Summary

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-59.288	0.000	0.000	59.288	0.000	0.000%
2	0.000	-59.288	-56.905	0.000	59.288	56.905	0.000%
3	28.363	-59.288	-49.281	-28.363	59.288	49.281	0.000%
4	49.126	-59.288	-28.453	-49.126	59.288	28.453	0.000%
5	56.726	-59.288	0.000	-56.726	59.288	0.000	0.000%
6	49.126	-59.288	28.453	-49.126	59.288	-28.453	0.000%
7	28.363	-59.288	49.281	-28.363	59.288	-49.281	0.000%
8	0.000	-59.288	56.905	0.000	59.288	-56.905	0.000%
9	-28.363	-59.288	49.281	28.363	59.288	-49.281	0.000%
10	-49.126	-59.288	28.453	49.126	59.288	-28.453	0.000%
11	-56.726	-59.288	0.000	56.726	59.288	0.000	0.000%
12	-49.126	-59.288	-28.453	49.126	59.288	28.453	0.000%
13	-28.363	-59.288	-49.281	28.363	59.288	49.281	0.000%
14	0.000	-70.015	0.000	0.000	70.015	0.000	0.000%
15	0.000	-70.015	-54.190	0.000	70.015	54.191	0.000%
16	27.029	-70.015	-46.930	-27.029	70.015	46.930	0.000%
17	46.816	-70.015	-27.095	-46.816	70.015	27.095	0.000%
18	54.058	-70.015	0.000	-54.058	70.015	0.000	0.000%
19	46.816	-70.015	27.095	-46.816	70.015	-27.095	0.000%
20	27.029	-70.015	46.930	-27.029	70.015	-46.930	0.000%
21	0.000	-70.015	54.190	0.000	70.015	-54.191	0.000%
22	-27.029	-70.015	46.930	27.029	70.015	-46.930	0.000%
23	-46.816	-70.015	27.095	46.816	70.015	-27.095	0.000%
24	-54.058	-70.015	0.000	-54.058	70.015	0.000	0.000%
25	-46.816	-70.015	-27.095	46.816	70.015	27.095	0.000%
26	-27.029	-70.015	-46.930	27.029	70.015	46.930	0.000%
27	0.000	-59.288	-32.009	0.000	59.288	32.009	0.000%
28	15.954	-59.288	-27.721	-15.954	59.288	27.721	0.000%
29	27.633	-59.288	-16.005	-27.633	59.288	16.005	0.000%
30	31.908	-59.288	0.000	-31.908	59.288	0.000	0.000%
31	27.633	-59.288	16.005	-27.633	59.288	-16.005	0.000%
32	15.954	-59.288	27.721	-15.954	59.288	-27.721	0.000%
33	0.000	-59.288	32.009	0.000	59.288	-32.009	0.000%
34	-15.954	-59.288	27.721	15.954	59.288	-27.721	0.000%
35	-27.633	-59.288	16.005	27.633	59.288	-16.005	0.000%
36	-31.908	-59.288	0.000	31.908	59.288	0.000	0.000%
37	-27.633	-59.288	-16.005	27.633	59.288	16.005	0.000%
38	-15.954	-59.288	-27.721	15.954	59.288	27.721	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00014830
3	Yes	5	0.00000001	0.00028864
4	Yes	5	0.00000001	0.00029348
5	Yes	4	0.00000001	0.00009349
6	Yes	5	0.00000001	0.00029133
7	Yes	5	0.00000001	0.00028981
8	Yes	4	0.00000001	0.00014830
9	Yes	5	0.00000001	0.00029387
10	Yes	5	0.00000001	0.00028914
11	Yes	4	0.00000001	0.00009349
12	Yes	5	0.00000001	0.00029125
13	Yes	5	0.00000001	0.00029266

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14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00094315
16	Yes	5	0.00000001	0.00065143
17	Yes	5	0.00000001	0.00066193
18	Yes	4	0.00000001	0.00091755
19	Yes	5	0.00000001	0.00065742
20	Yes	5	0.00000001	0.00065388
21	Yes	4	0.00000001	0.00094314
22	Yes	5	0.00000001	0.00066313
23	Yes	5	0.00000001	0.00065266
24	Yes	4	0.00000001	0.00091767
25	Yes	5	0.00000001	0.00065706
26	Yes	5	0.00000001	0.00066057
27	Yes	4	0.00000001	0.00008166
28	Yes	5	0.00000001	0.00009622
29	Yes	5	0.00000001	0.00009834
30	Yes	4	0.00000001	0.00006075
31	Yes	5	0.00000001	0.00009735
32	Yes	5	0.00000001	0.00009674
33	Yes	4	0.00000001	0.00008166
34	Yes	5	0.00000001	0.00009861
35	Yes	5	0.00000001	0.00009639
36	Yes	4	0.00000001	0.00006075
37	Yes	5	0.00000001	0.00009735
38	Yes	5	0.00000001	0.00009807

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	154 - 134.81	55.144	27	3.134	0.002
L2	139.14 - 89.14	45.472	27	3.052	0.001
L3	94.81 - 44.52	20.621	27	2.095	0.000
L4	51.44 - 1	5.910	27	1.075	0.000

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.000	EEI Pine Branches	27	53.830	3.127	0.002	14190
142.000	EEI Pine Branches	27	47.307	3.077	0.002	5931
132.000	EEI Pine Branches	27	40.982	2.961	0.001	4015
122.000	EEI Pine Branches	27	34.956	2.775	0.001	3281
120.030	7770 Power	27	33.810	2.732	0.001	3167
112.000	EEI Pine Branches	27	29.297	2.542	0.001	2773
102.000	EEI Pine Branches	27	24.072	2.283	0.000	2401
92.000	EEI Pine Branches	27	19.348	2.023	0.000	2182
82.000	EEI Pine Branches	27	15.172	1.775	0.000	2149

### Maximum Tower Deflections - Design Wind

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	154 - 134.81	97.813	2	5.561	0.004
L2	139.14 - 89.14	80.669	2	5.415	0.003
L3	94.81 - 44.52	36.604	2	3.719	0.001
L4	51.44 - 1	10.494	2	1.909	0.000

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.000	EEI Pine Branches	2	95.484	5.549	0.004	8115
142.000	EEI Pine Branches	2	83.923	5.459	0.003	3391
132.000	EEI Pine Branches	2	72.710	5.254	0.002	2292
122.000	EEI Pine Branches	2	62.026	4.924	0.001	1870
120.030	7770 Power	2	59.994	4.848	0.001	1804
112.000	EEI Pine Branches	2	51.992	4.511	0.001	1578
102.000	EEI Pine Branches	2	42.725	4.053	0.001	1364
92.000	EEI Pine Branches	2	34.345	3.591	0.001	1238
82.000	EEI Pine Branches	2	26.935	3.151	0.001	1217

### Base Plate Design Data

Plate Thickness in	Number of Anchor Bolts	Anchor Bolt Size in	Actual Allowable Ratio Bolt Tension K	Actual Allowable Ratio Concrete Stress ksi	Actual Allowable Ratio Plate Stiffener Stress ksi	Actual Allowable Ratio Stiffener Stress ksi	Controlling Condition	Critical Ratio
3.000	28	2.250	135.010 118.090 1.14	2.832 2.800 1.01	46.028 45.000 1.02		Bolt T	1.14 ✓

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	19.190	0.000	0.0	38.627	17.118	-5.828	661.218	0.009
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	50.000	0.000	0.0	39.000	38.880	-20.309	1516.340	0.013
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	50.290	0.000	0.0	39.000	77.881	-37.109	3037.380	0.012
L4	44.52 - 1 (4)	TP61x48.575x0.563	50.440	0.000	0.0	39.000	107.904	-59.245	4208.240	0.014

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Section No.	Elevation	Size	L	L <sub>a</sub>	Kl/r	F <sub>a</sub>	A	Actual P	Allow. P <sub>a</sub>	Ratio P/P <sub>a</sub>
			ft	ft		ksi	in <sup>2</sup>	K	K	

### Pole Bending Design Data

Section No.	Elevation	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> /F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> /F <sub>by</sub>
	ft									
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	141.655	13.972	38.627	0.362	0.000	0.000	38.627	0.000
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	1564.28 3	49.919	39.000	1.280	0.000	0.000	39.000	0.000
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	3784.31 7	48.262	39.000	1.237	0.000	0.000	39.000	0.000
L4	44.52 - 1 (4)	TP61x48.575x0.563	6585.75 0	49.181	39.000	1.261	0.000	0.000	39.000	0.000

### Pole Shear Design Data

Section No.	Elevation	Size	Actual V K	Actual f <sub>v</sub> ksi	Allow. F <sub>v</sub> ksi	Ratio f <sub>v</sub> /F <sub>v</sub>	Actual T kip-ft	Actual f <sub>vt</sub> ksi	Allow. F <sub>vt</sub> ksi	Ratio f <sub>vt</sub> /F <sub>vt</sub>
	ft									
L1	154 - 134.81 (1)	TP30.03x25.25x0.188	16.166	0.944	26.000	0.073	0.000	0.000	26.000	0.000
L2	134.81 - 89.14 (2)	TP40.91x28.576x0.313	43.941	1.130	26.000	0.087	0.462	0.007	26.000	0.000
L3	89.14 - 44.52 (3)	TP51.28x38.886x0.5	53.965	0.693	26.000	0.053	0.460	0.003	26.000	0.000
L4	44.52 - 1 (4)	TP61x48.575x0.563	56.950	0.528	26.000	0.041	0.460	0.002	26.000	0.000

### Pole Interaction Design Data

Section No.	Elevation	Ratio P P <sub>a</sub>	Ratio f <sub>bx</sub> F <sub>bx</sub>	Ratio f <sub>by</sub> F <sub>by</sub>	Ratio f <sub>v</sub> F <sub>v</sub>	Ratio f <sub>vt</sub> F <sub>vt</sub>	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	ft								
L1	154 - 134.81 (1)	0.009	0.362	0.000	0.073	0.000	0.372	1.333	H1-3+VT ✓
L2	134.81 - 89.14 (2)	0.013	1.280	0.000	0.087	0.000	1.295	1.333	H1-3+VT ✓
L3	89.14 - 44.52 (3)	0.012	1.237	0.000	0.053	0.000	1.250	1.333	H1-3+VT ✓
L4	44.52 - 1 (4)	0.014	1.261	0.000	0.041	0.000	1.276	1.333	H1-3+VT ✓

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## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P <sub>allow</sub> K	% Capacity	Pass Fail	
L1	154 - 134.81	Pole	TP30.03x25.25x0.188	1	-5.828	881.404	27.9	Pass	
L2	134.81 - 89.14	Pole	TP40.91x28.576x0.313	2	-20.309	2021.281	97.2	Pass	
L3	89.14 - 44.52	Pole	TP51.28x38.886x0.5	3	-37.109	4048.827	93.8	Pass	
L4	44.52 - 1	Pole	TP61x48.575x0.563	4	-59.245	5609.584	95.7	Pass	
							Summary		
							Pole (L2)	97.2	Pass
							Base Plate	85.8	Pass
							<b>RATING =</b>	<b>97.2</b>	<b>Pass</b>

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## Monopole Pier and Pad Foundation

**Site Name:** CT 2001

TIA-222 Revision: **F**

Design Reactions		
Shear, <b>S:</b>	57	kips
Moment, <b>M:</b>	6552	ft-kips
Tower Height, <b>H:</b>	153	ft
Tower Weight, <b>Wt:</b>	60	kips
Base Diameter, <b>BD:</b>	5.10	ft

Foundation Dimensions		
Depth, <b>D:</b>	6.5	ft
Pad Width, <b>W:</b>	32	ft
Neglected Depth, <b>N:</b>	3.33	ft
Thickness, <b>T:</b>	4.00	ft
Pier Diameter, <b>Pd:</b>	7.50	ft
Ext. Above Grade, <b>E:</b>	1.00	ft
BP Dist. Above Pier:	3	in.
Clear Cover, <b>Cc:</b>	3.0	in

Soil Properties		
Soil Unit Weight, <b>y:</b>	0.100	kcf
Ult. Bearing Capacity, <b>Bc:</b>	12.0	ksf
Angle of Friction, <b>Φ:</b>	10	deg
Cohesion, <b>Co:</b>	0.000	ksf
Passive Pressure, <b>Pp:</b>	0.000	ksf
Base Friction, <b>μ:</b>	0.45	

Material Properties		
Rebar Yield Strength, <b>Fy:</b>	60000	psi
Concrete Strength, <b>F'c:</b>	4000	psi
Concrete Unit Weight, <b>δc:</b>	0.150	kcf
Seismic Zone, <b>z:</b>	1	

Rebar Properties		
Pier Rebar Size, <b>Sp:</b>	11	
Pier Rebar Quantity, <b>mp:</b>	36	21
Pad Rebar Size, <b>Spad:</b>	11	
Pad Rebar Quantity, <b>mpad:</b>	84	11
Pier Tie Size, <b>St:</b>	3	4
Tie Quantity, <b>mt:</b>	5	5

Design Checks			
	Capacity/ Availability	Demand/ Limits	Check
Req'd Pier Diam.(ft)	7.5	7.1	OK
Overspinning (ft-kips)	8829.21	6552.00	74.2%
Shear Capacity (kips)	213.68	57.00	26.7%
Bearing (ksf)	9.00	2.74	30.4%
Pad Shear - 1-way (kips)	1613.64	680.03	42.1%
Pad Shear - 2-way (kips)	3545.81	142.61	4.0%
Pad Moment Capacity (k-ft)	24344.33	3303.66	13.6%
Pier Moment Capacity (k-ft)	9815.92	6751.50	68.8%

Current Analysis	Previous
Overspinning 6,586ft-kip	6,552ft-kip
Shear 57kip	57kip
Axial 59kip	59kip
Previous loading approximately equal of current analysis; therefore, soil and foundation okay.	

## PROJECT INFORMATION

SCOPE OF WORK:	<ul style="list-style-type: none"> <li>REMOVE (1) EXISTING ANTENNA PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) EXISTING ANTENNA TO BE REMOVED; (3) EXISTING ANTENNAS PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (9) EXISTING ANTENNAS TO REMAIN.</li> <li>NEW AT&amp;T ANTENNAS; (1) NEW LTE ANTENNA PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW ANTENNAS;</li> <li>AT&amp;T RRUs: (1) NEW RRUs PER SECTOR WITH (3) SECTORS, FOR A TOTAL OF (3) NEW RRUs; (1) EXISTING RRU PER SECTOR TO BE REPLACED PER SECTOR, FOR A TOTAL OF (3) EXISTING RRUS; (1) EXISTING RRU PER SECTOR TO REMAIN, FOR A TOTAL OF (3) EXISTING RRUs.</li> <li>MONOPOLE BASE PLATE MODIFICATION</li> </ul>
SITE ADDRESS:	33 BOARDMAN ROAD NEW MILFORD, CT 06776
LATITUDE: LONGITUDE:	41.5994031 41° 35' 57.85116"N -73.4374739 73° 26' 14.90604"W
USID:	83126
TOWER OWNER:	
TYPE OF SITE:	MONOPINE/INDOOR EQUIPMENT
MONOPINE HEIGHT:	150'-0"±
RAD CENTER:	120'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

## DRAWING INDEX

## REV.

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GN-1	GROUNDING & GENERAL NOTES	3
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A-2	EQUIPMENT LAYOUT	3
A-3	ANTENNA LAYOUTS & ELEVATIONS	3
A-4	DETAILS	3
A-5	DETAILS	3
G-1	GROUNDING DETAILS	3

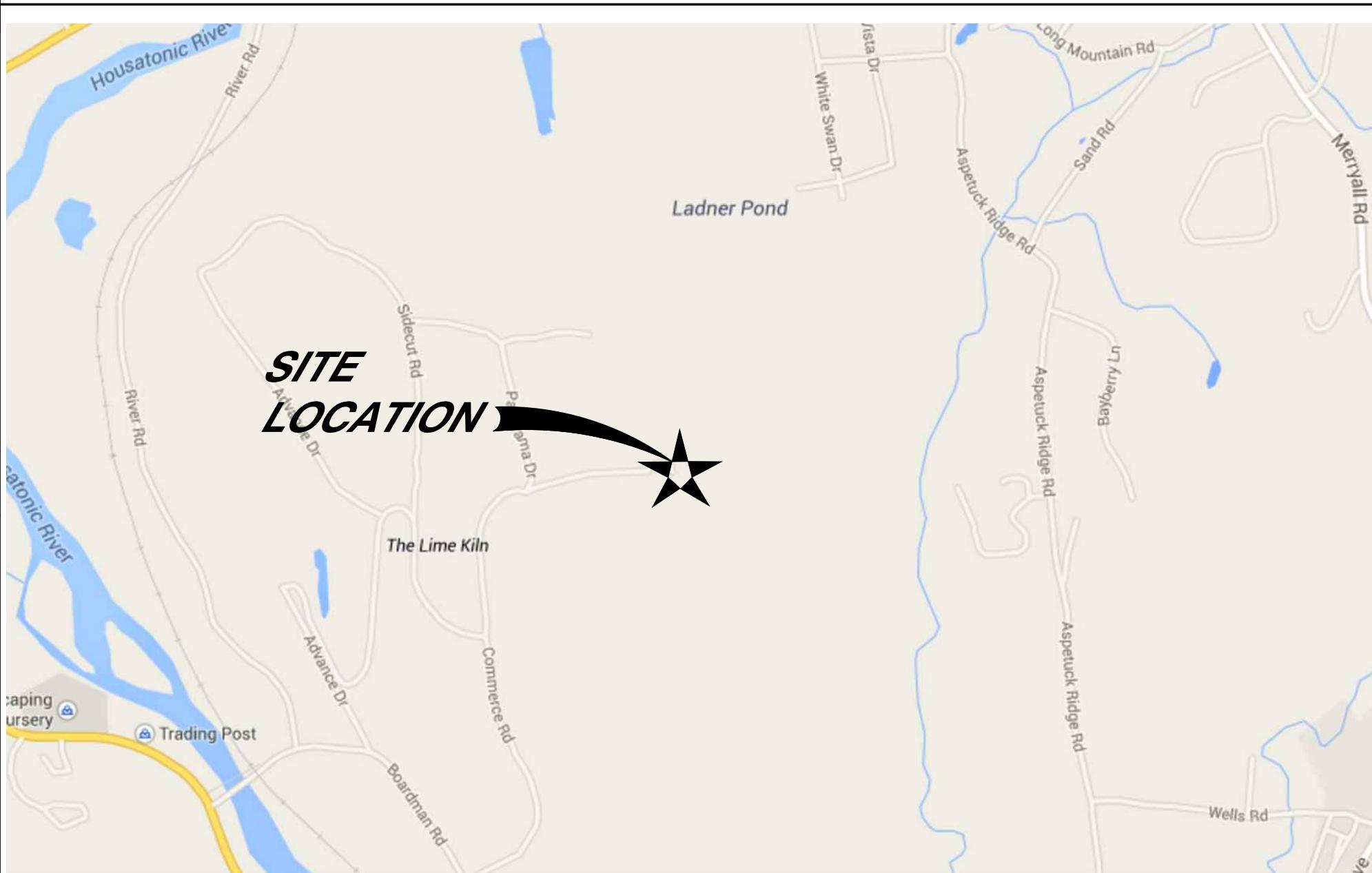
## APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		



**FA CODE: 10107964**  
**SITE NUMBER: CT2001**  
**SITE NAME: NEW MILFORD-BOARDMAN ROAD**  
**PROJECT: LTE 4C WCS & BWE**



## PROJECT TEAM

CLIENT REPRESENTATIVE	
COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

RF ENGINEER:	
COMPANY:	AT&T MOBILITY - NEW ENGLAND
ADDRESS:	550 COCHITUIATE ROAD SUITE 550 13 & 14 FRAMINGHAM, MA 01701
CONTACT:	CAMERON SYME
PHONE:	508-596-7146
EMAIL:	cs6970@att.com

CONSTRUCTION MANAGEMENT:	
COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	GRZEGORZ "GREG" DORMAN
PHONE:	484-683-1750
EMAIL:	gdorman@empiretelecomm.com

SITE ACQUISITION:	
COMPANY:	VERTICAL DEVELOPMENT, LLC
ADDRESS:	20 COMMERCIAL STREET BRANFORD, CT 06405
CONTACT:	DAVID BASS
PHONE:	203-826-5857
EMAIL:	dbass@verticaldevelopmentllc.com

ZONING:	
COMPANY:	VERTICAL DEVELOPMENT, LLC
ADDRESS:	20 COMMERCIAL STREET BRANFORD, CT 06405
CONTACT:	DAVID BASS
PHONE:	203-826-5857
EMAIL:	dbass@verticaldevelopmentllc.com

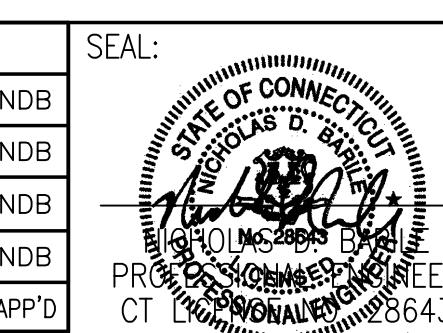
ENGINEERING:	
COMPANY:	COM-EX CONSULTANTS, LLC
ADDRESS:	115 ROUTE 46, SUITE E39 MOUNTAIN LAKES, NJ 07046
CONTACT:	NICHOLAS D. BARILE, P.E.
PHONE:	862-209-4300
EMAIL:	nbarile@comexconsultants.com

## GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



CONNECTICUT LAW REQUIRES  
TWO WORKING DAYS NOTICE PRIOR TO  
ANY EARTH MOVING ACTIVITIES BY  
CALLING 800-922-4455 OR DIAL 811



AT&T

DRAWING TITLE:

TITLE SHEET

JOB NUMBER:

16035-EMP

DRAWING NUMBER:

T-1

REV:

3

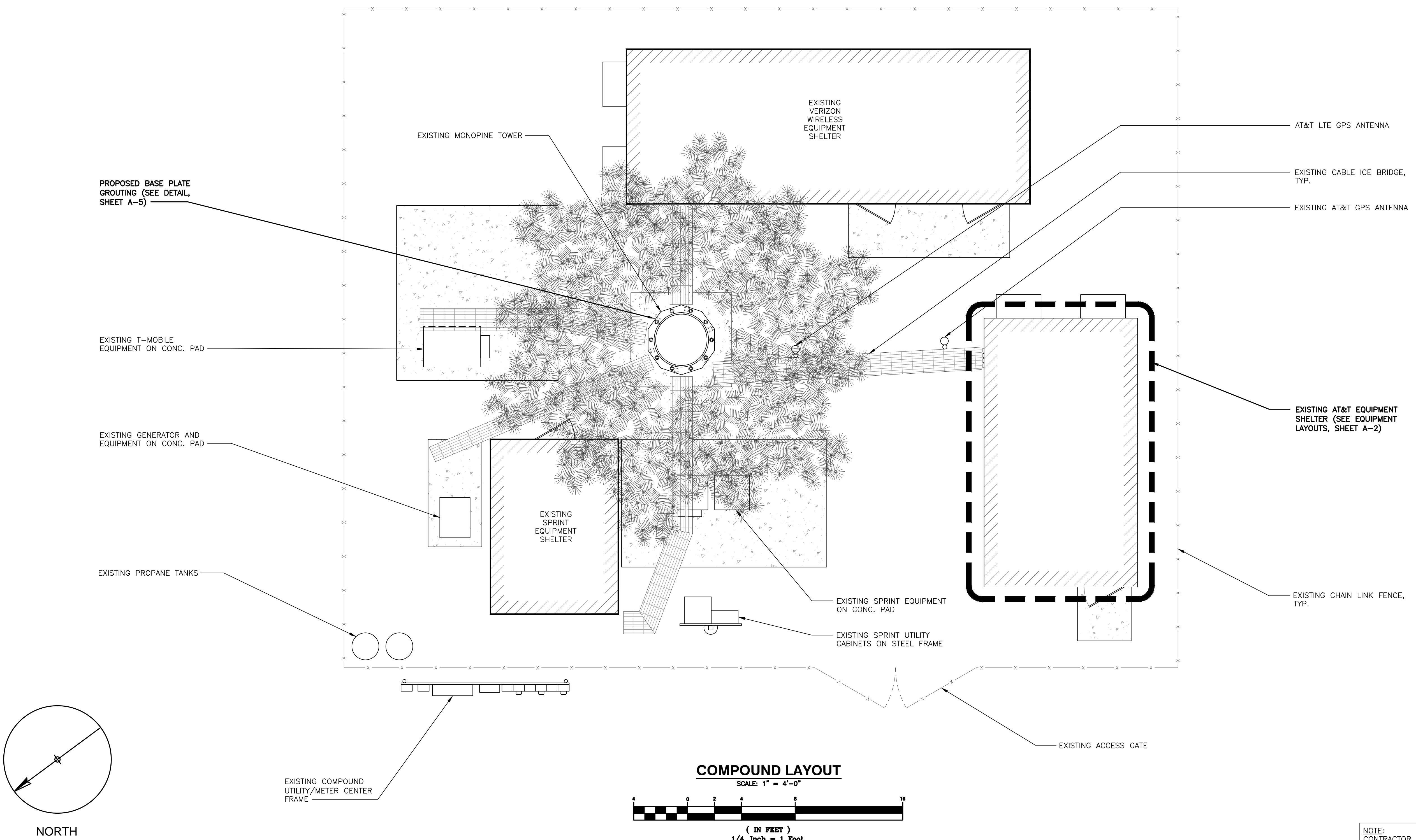
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2	2/21/17	REVISED PER STRUCTURAL MODS	KCD	NDB	NDB
1	1/4/17	REVISED PER RFDS	KCD	NDB	NDB
0	09/20/16	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
		SCALE: AS SHOWN	DESIGNED BY:	NJM	DRAWN BY: AM

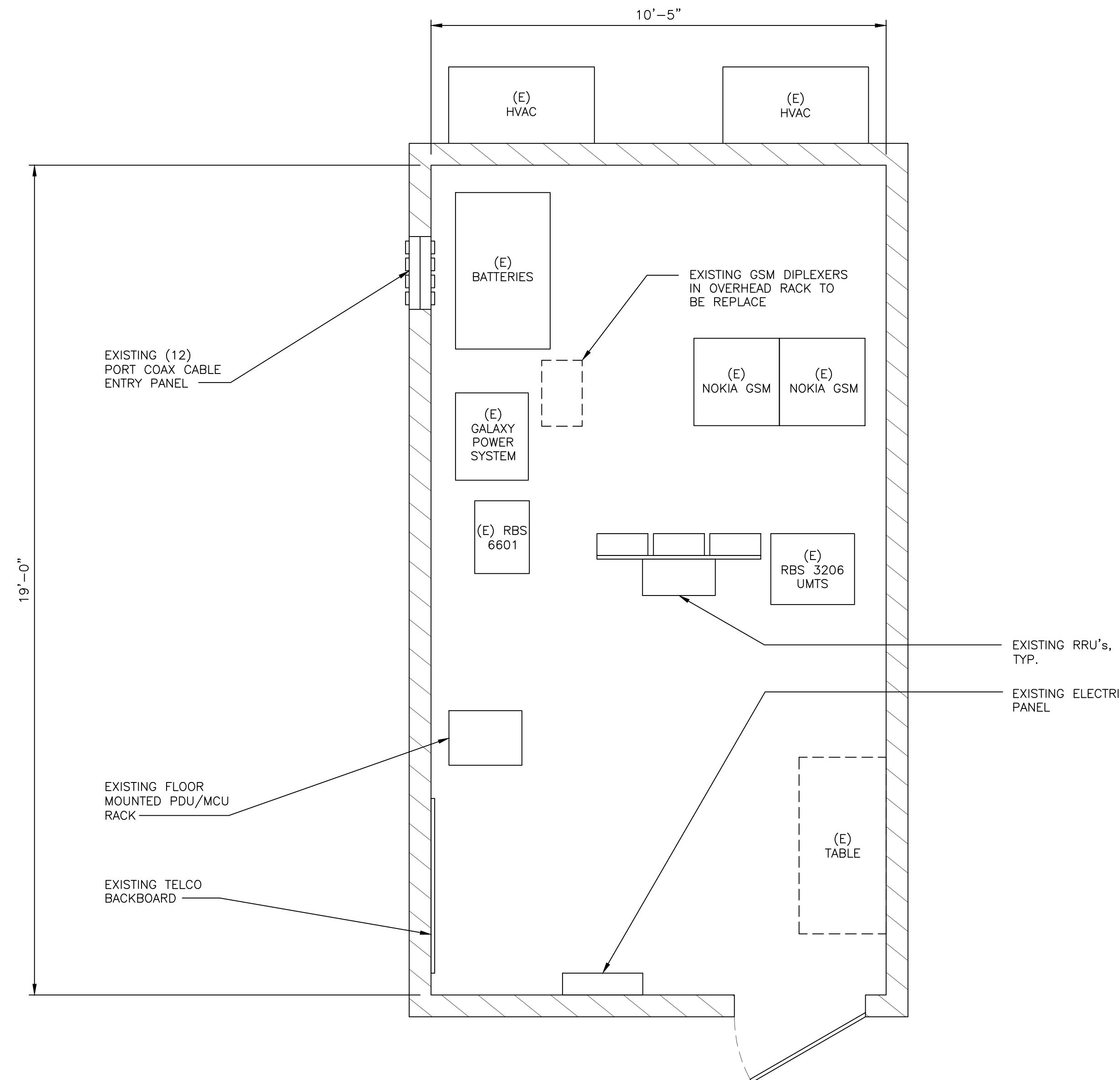
## GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE  $\frac{1}{2}$ " OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

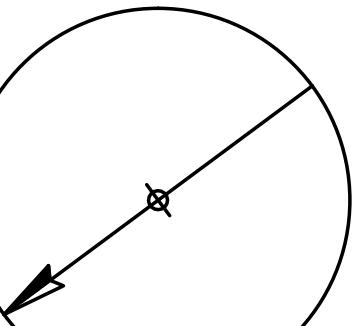
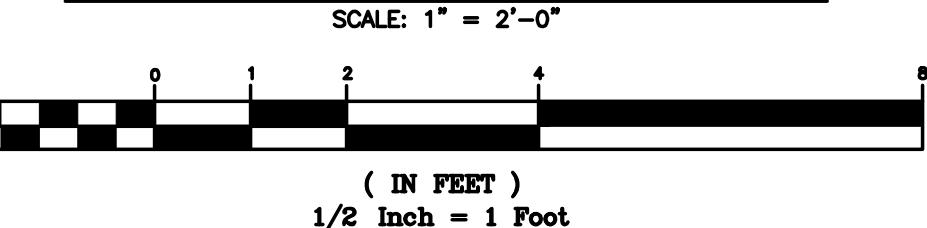
## GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - EMPIRE TELECOM  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY  
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR.
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-0002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

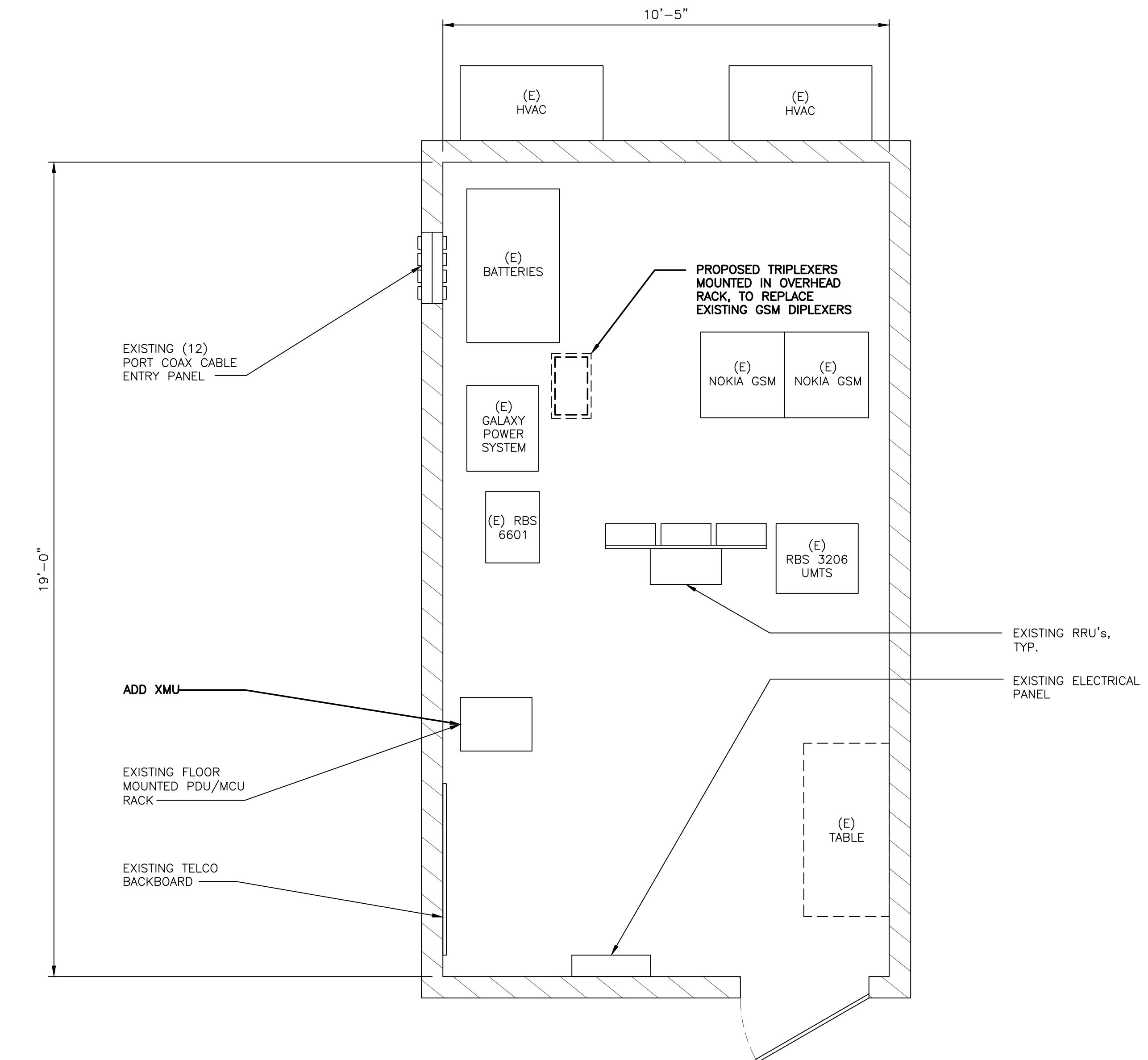




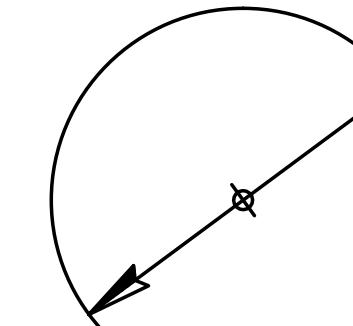
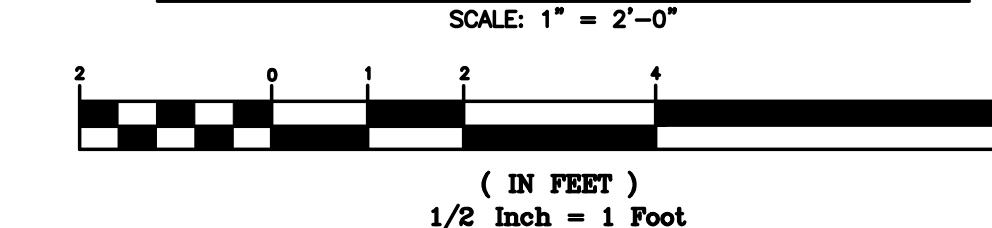
EXISTING EQUIPMENT LAYOUT



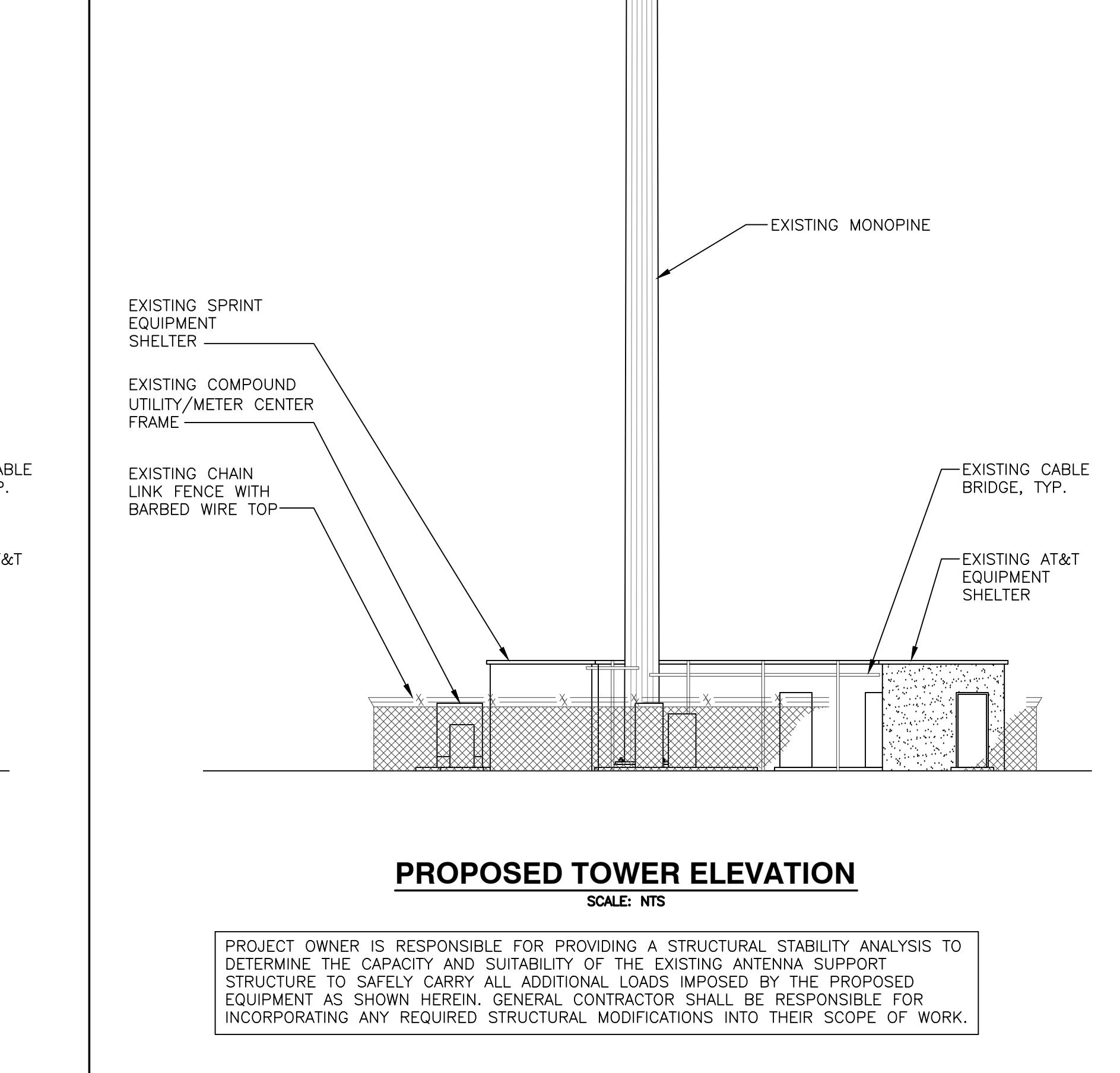
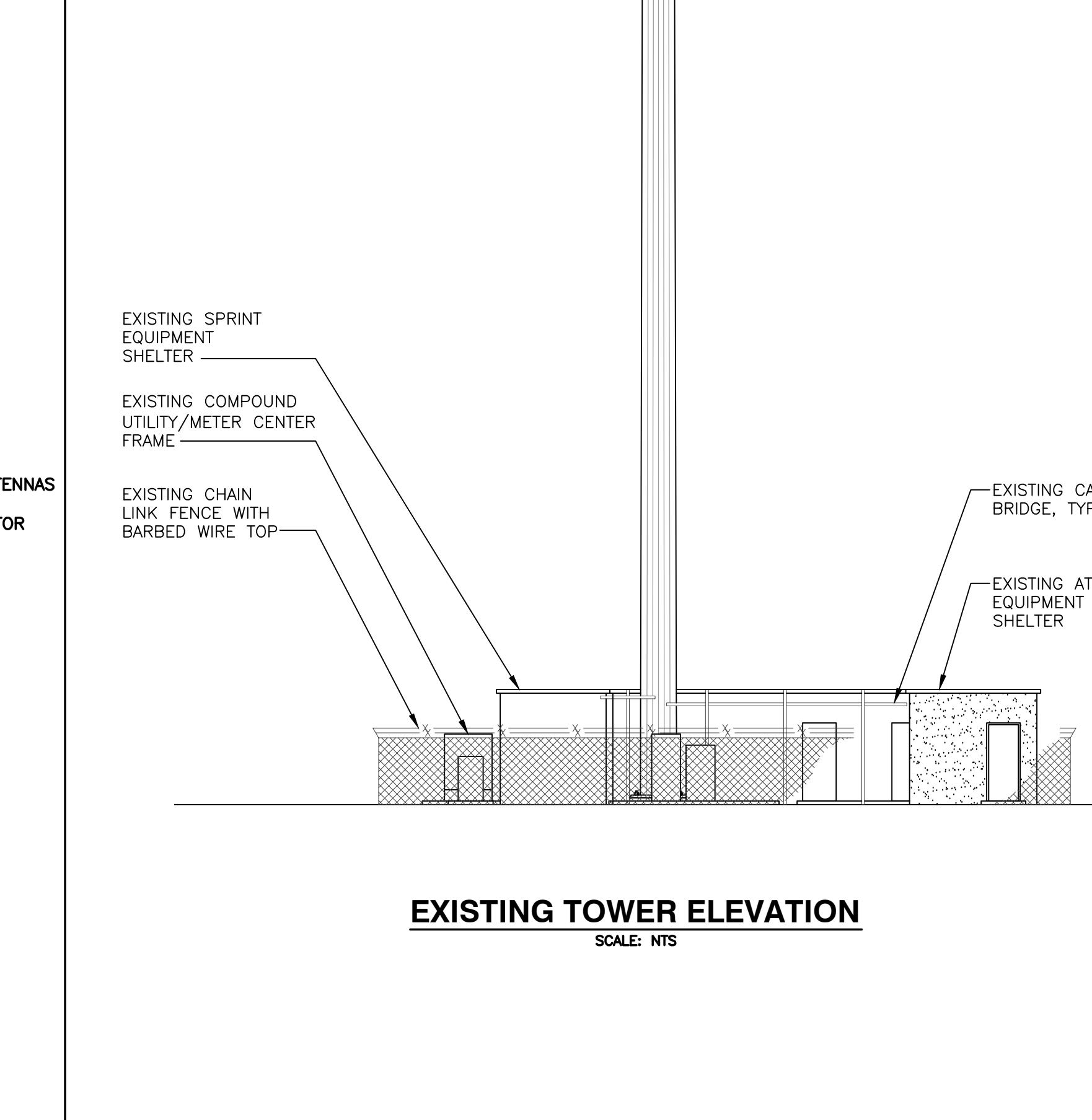
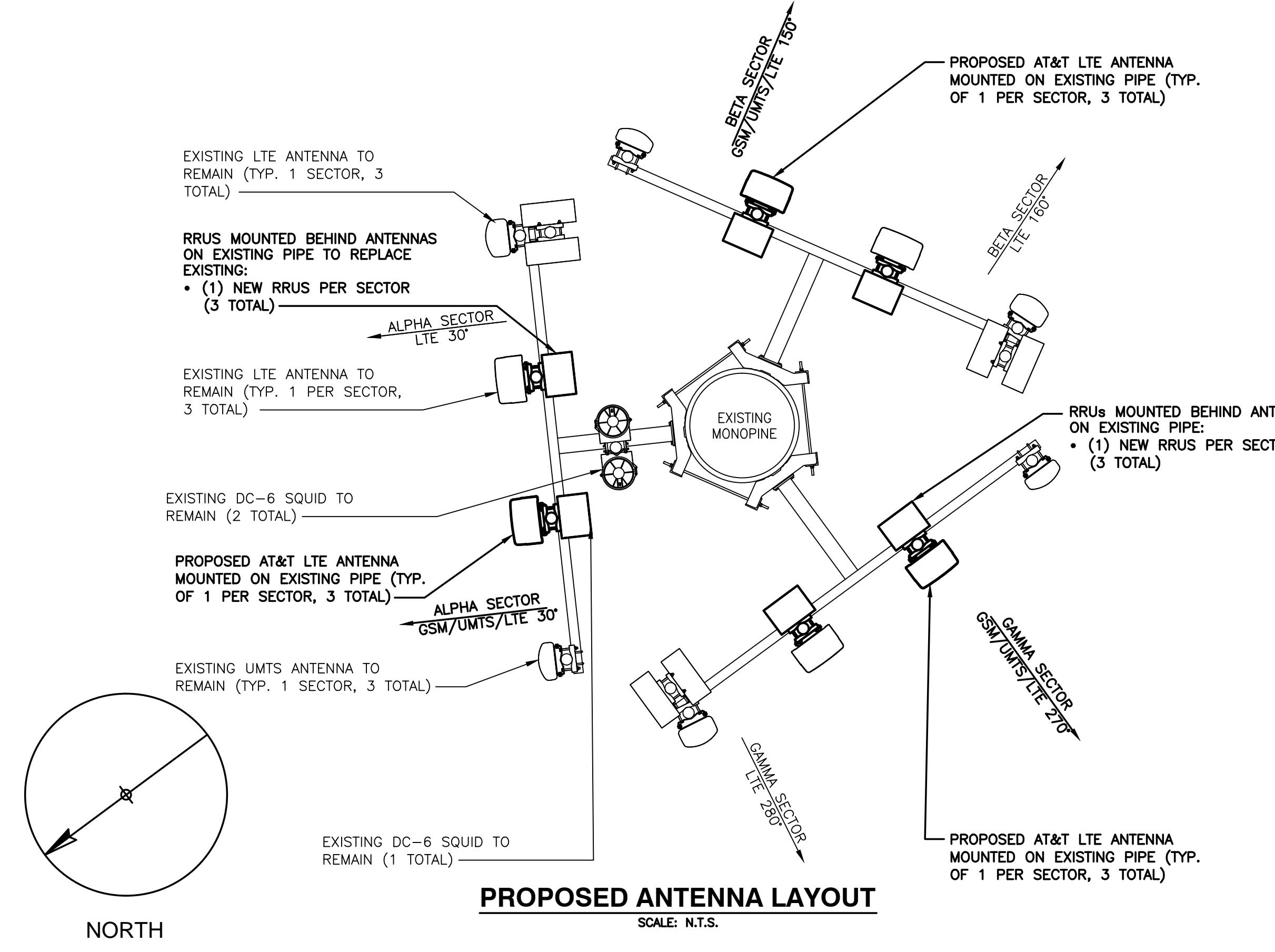
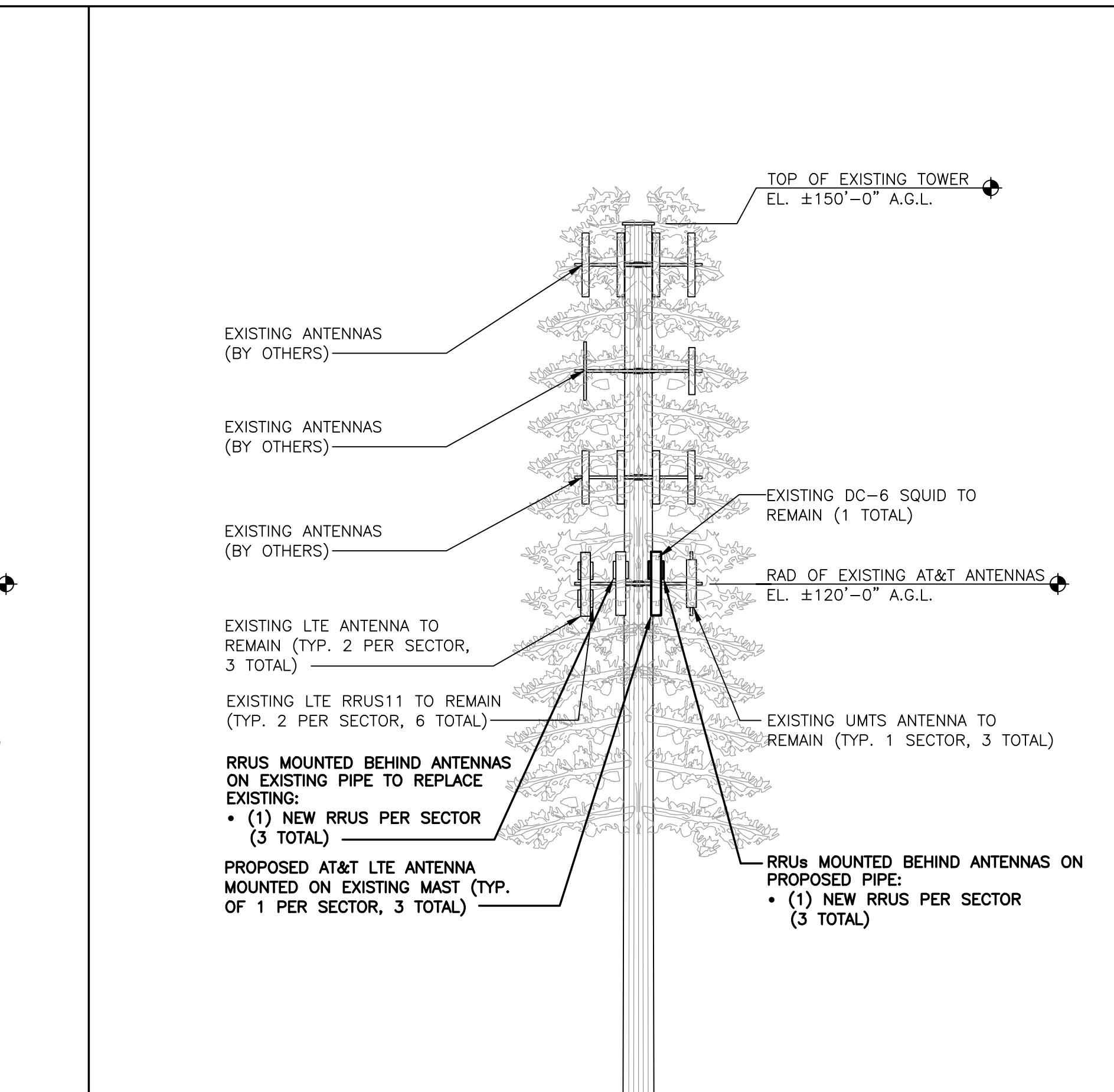
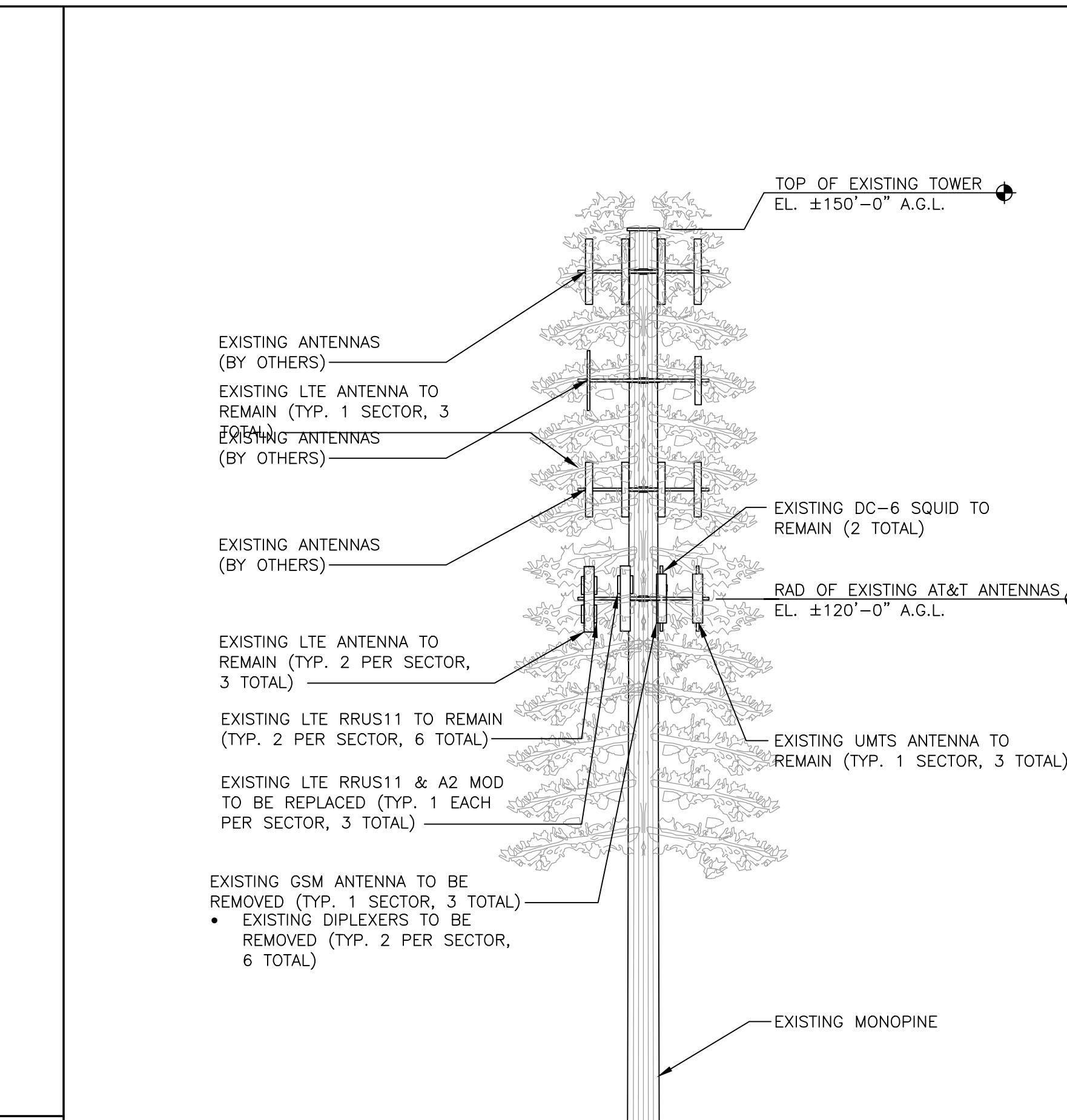
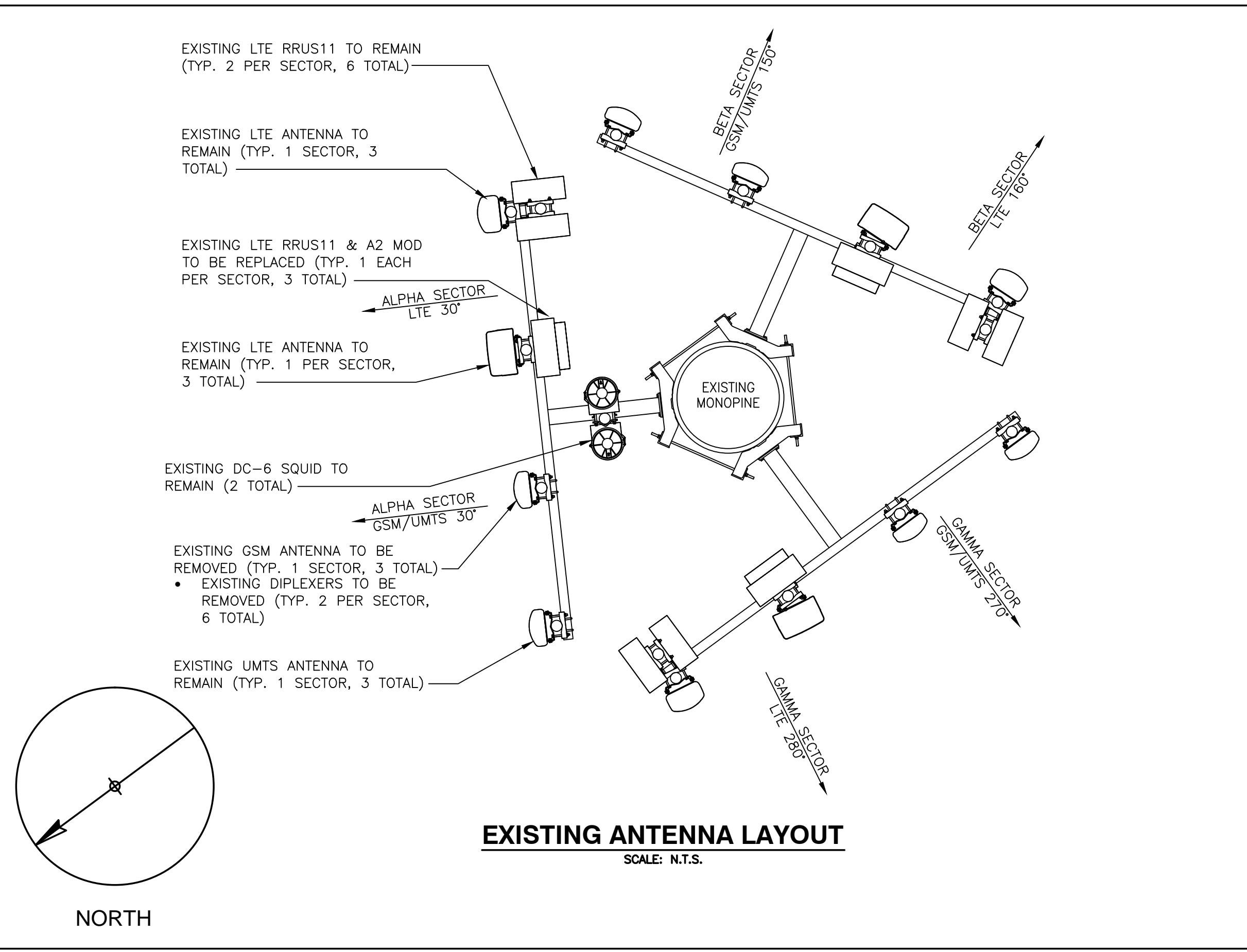
NORTH

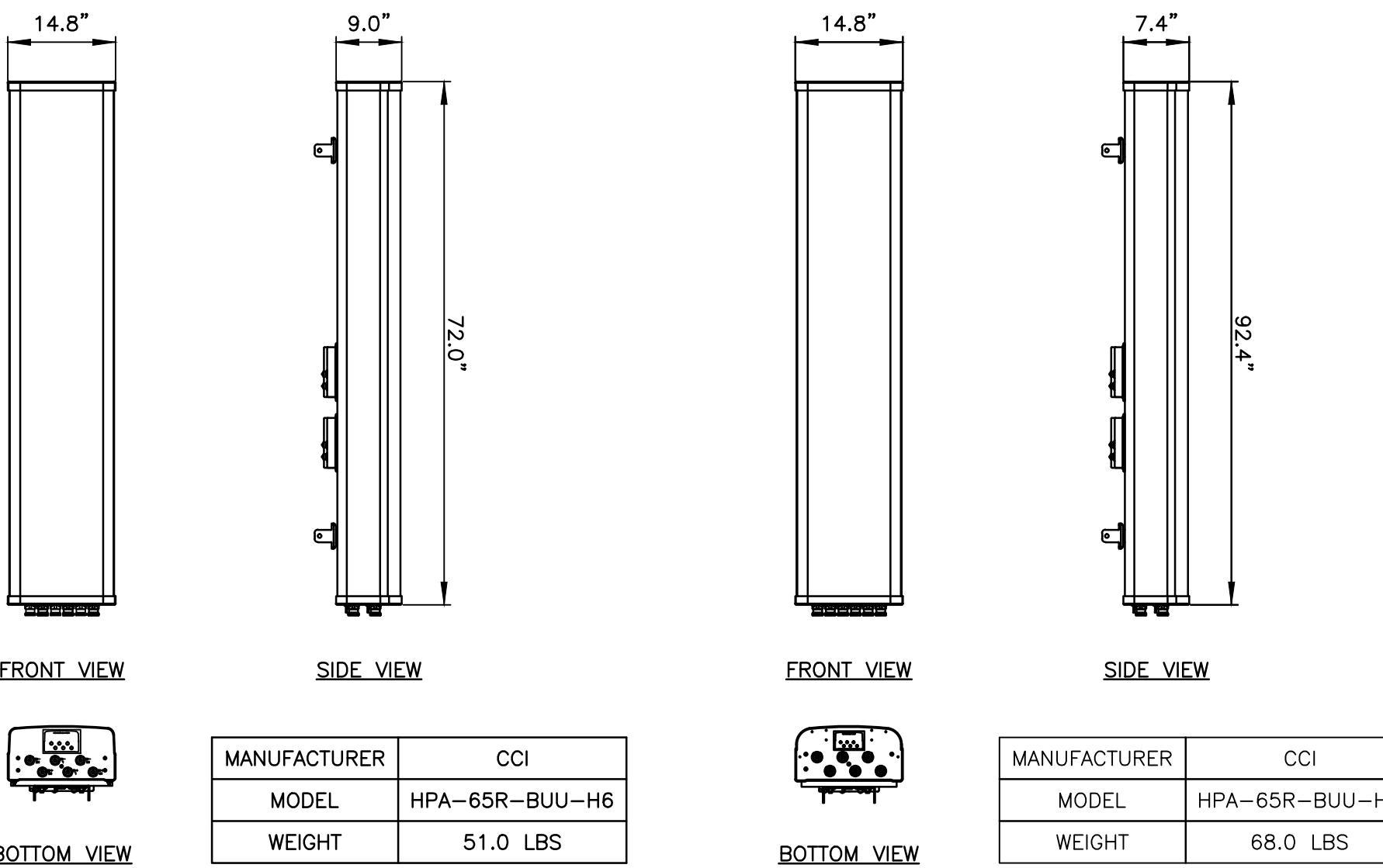


PROPOSED EQUIPMENT LAYOUT



NORTH





## LTE ANTENNA DETAIL

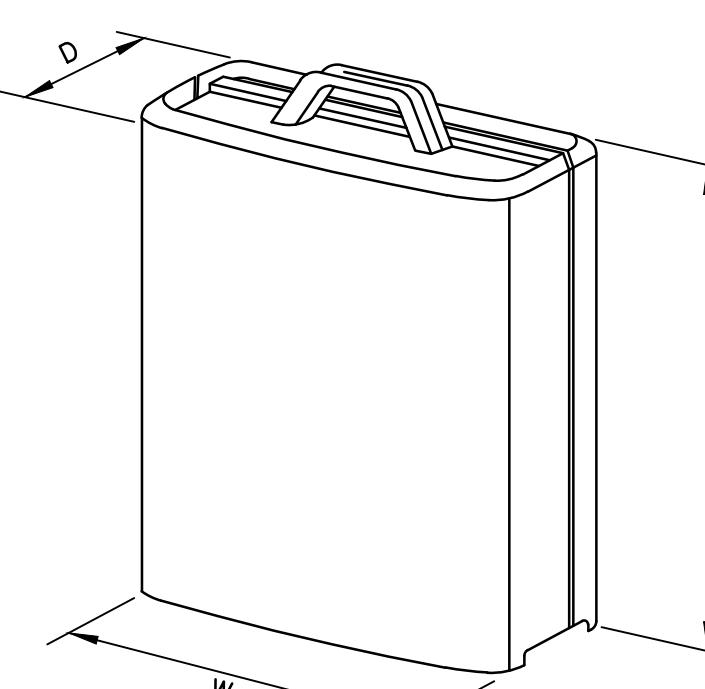
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## LTE ANTENNA DETAIL

SCALE: N

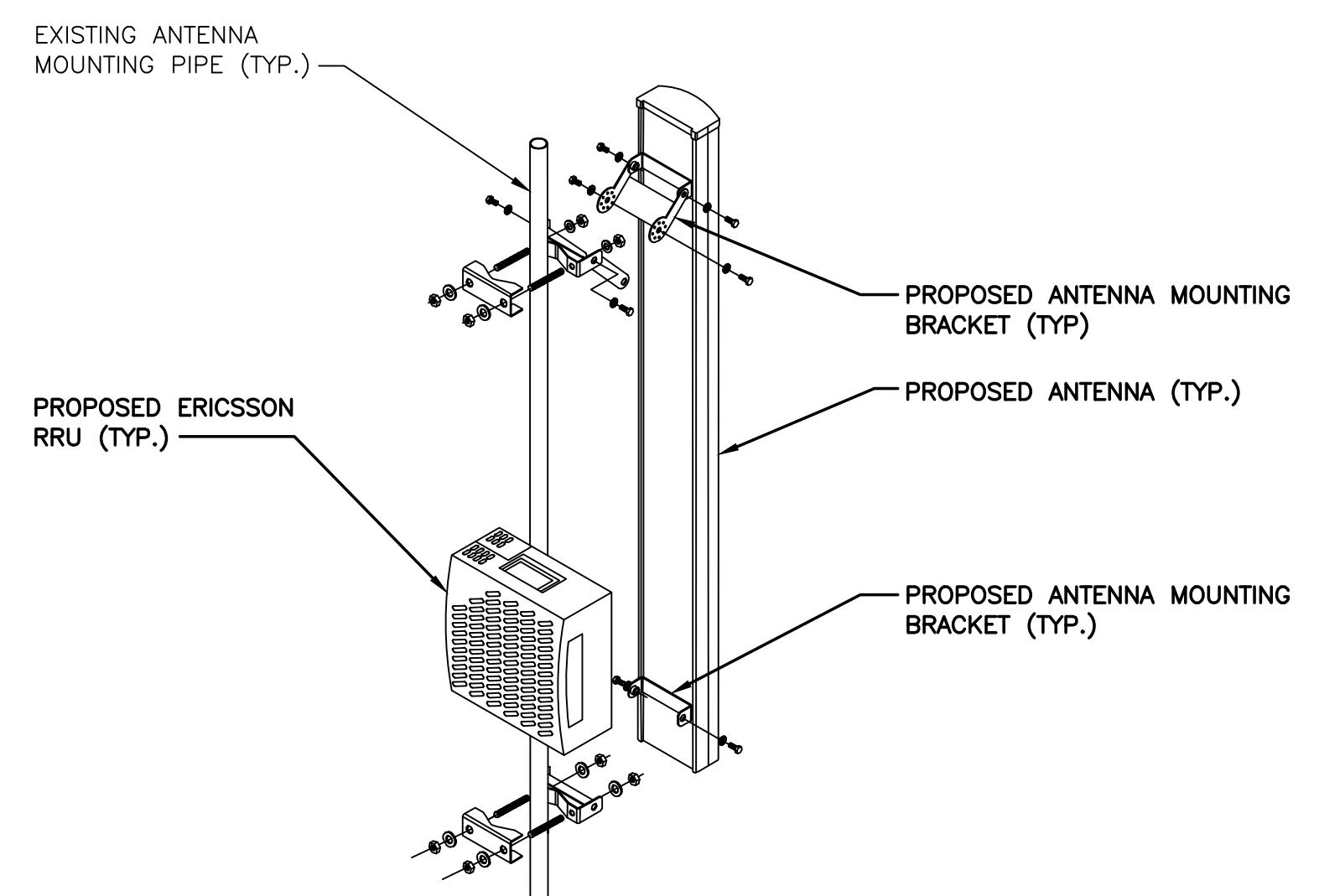
## **RRUS DETAIL**

**SCALE: N.T.S.**



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
*A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
RRUS-32 B2	27.2" x 12.1" x 7"	60 LBS

\*DENOTES EXISTING.



## **ANTENNA AND RRU MOUNTING DETAIL**

**SCALE: N.T.S.**

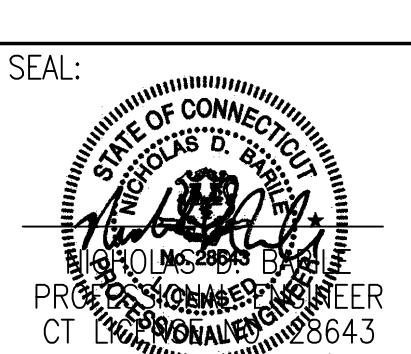
EXISTING ANTENNA SCHEDULE				
<u>SECTOR</u>	<u>POSITION</u>	<u>MAKE</u>	<u>MODEL</u>	<u>SIZE (INCHES)</u>
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	POWERWAVE	7770	55"x11"x5"
	A3	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	A4	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	POWERWAVE	7770	55"x11"x5"
	B3	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	B4	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	POWERWAVE	7770	55"x11"x5"
	G3	CCI	HPA-65R-BUU-H8	92"x14.8"x9.0"
	G4	KMW	AM-X-CD-17-65-00T-RET	96"x11.8"x5.9"

PROPOSED ANTENNA SCHEDULE				
<u>SECTOR</u>	<u>POSITION</u>	<u>MAKE</u>	<u>MODEL</u>	<u>SIZE (INCHES)</u>
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	A3	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	A4	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	B3	CCI	HPA-65R-BUU-H6	72"x14.8"x9.0"
	B4	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	CCI	HPA-65R-BUU-H8	92"x14.8"x9.0"
	G3	CCI	HPA-65R-BUU-H8	92"x14.8"x9.0"
	G4	KMW	AM-X-CD-17-65-00T-RET	96"x11.8"x5.9"

PROPOSED RRH SCHEDULE					
<u>SECTOR</u>	<u>MAKE</u>	<u>MODEL</u>	<u>SIZE (INCHES)</u>	<u>ADDITIONAL COMPONENT</u>	<u>SIZE (INCHES)</u>
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 B2	27.2"X12.1"X7"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 B2	27.2"X12.1"X7"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUS-32 B2	27.2"X12.1"X7"		
	ERICSSON	RRUS-32	29.9"x13.3"x9.5"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

3	03/01/17	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
2	2/21/17	REVISED PER STRUCTURAL MODS	KCD	NDB	NDB
1	1/4/17	REVISED PER RFDS	KCD	NDB	NDB
0	09/20/16	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: NJM	DRAWN BY: AM		



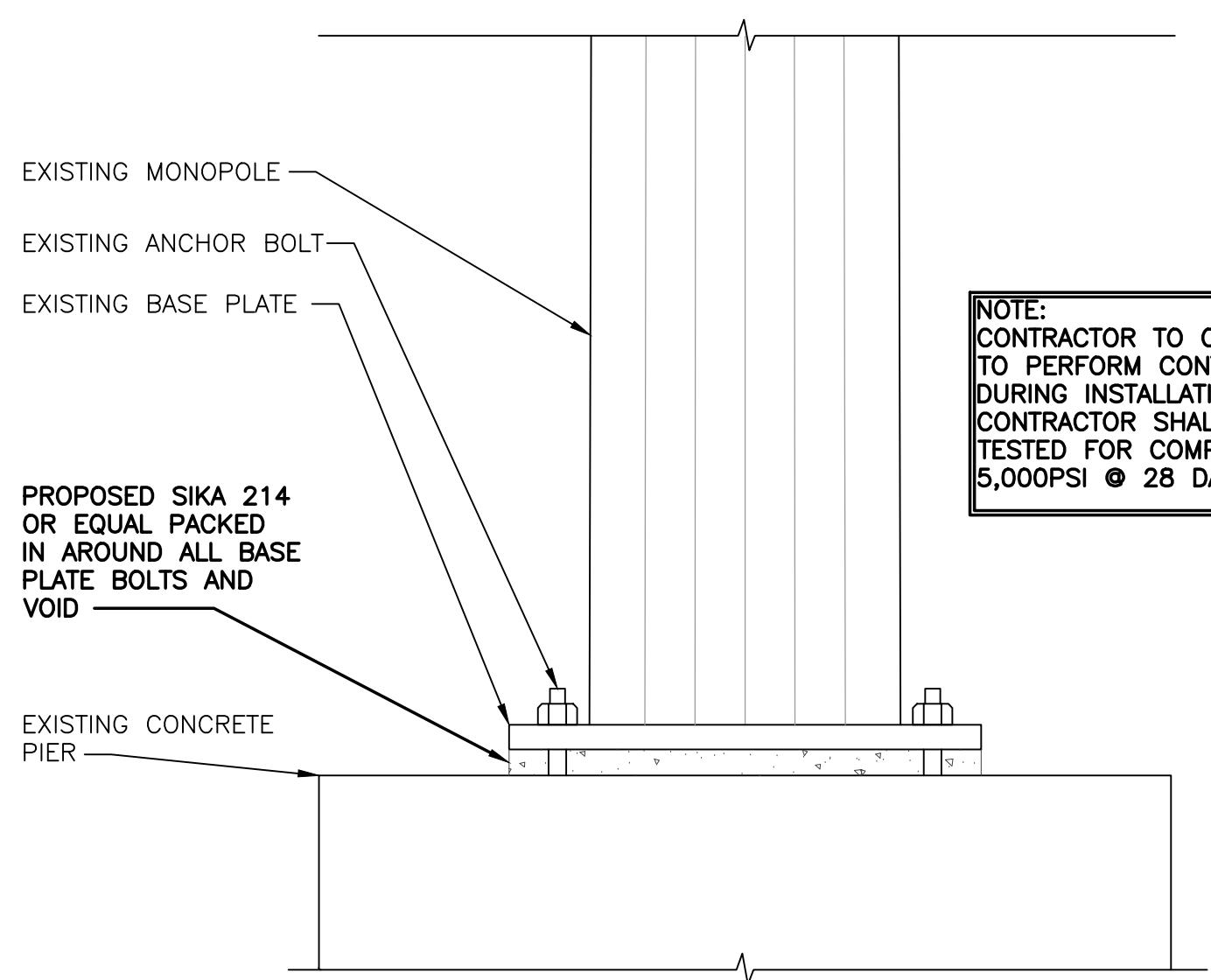
AT&T

1

## DETAILS

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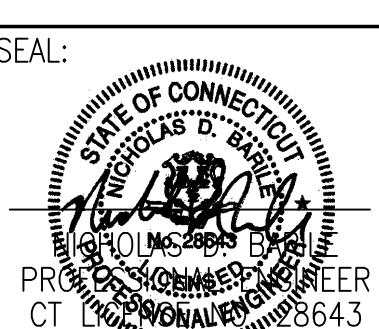
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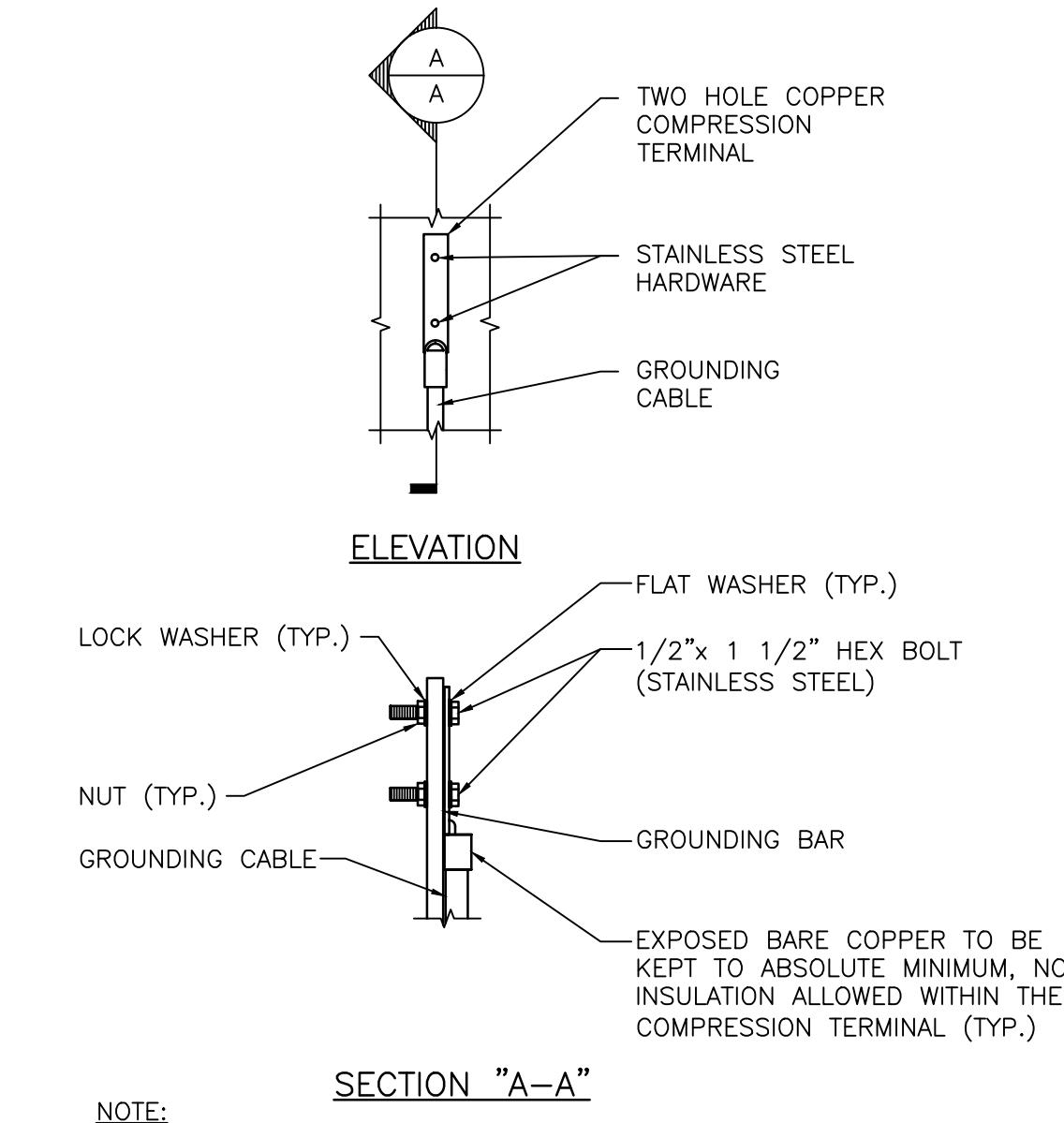
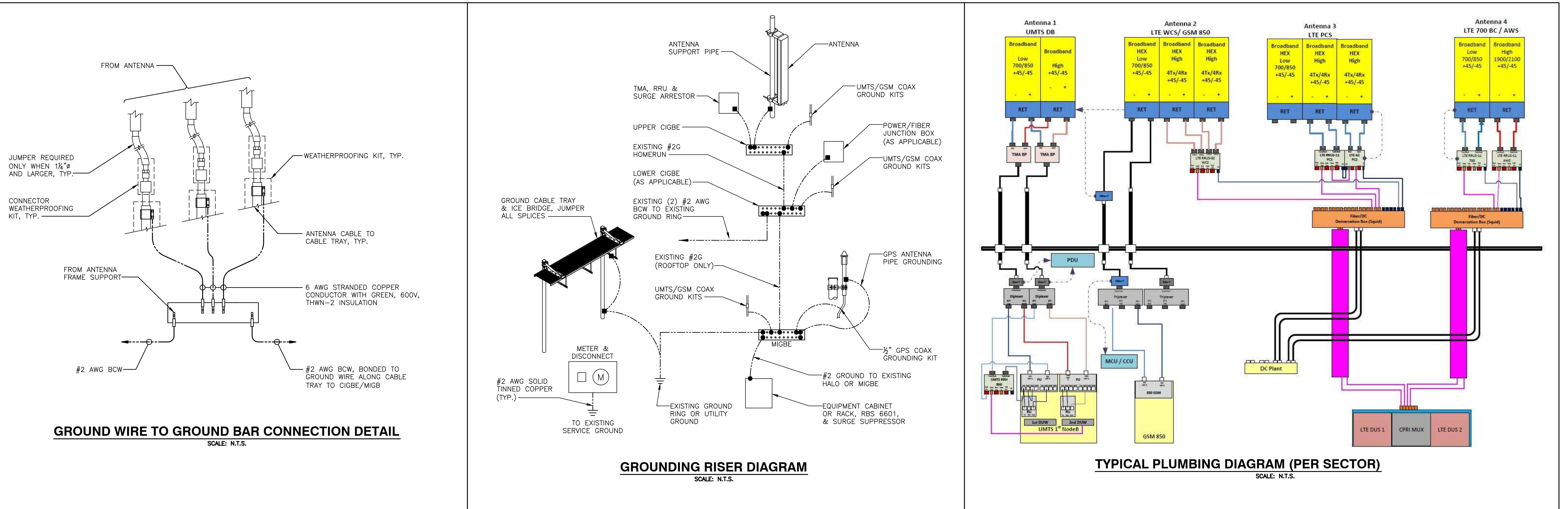
**BASE PLATE MODIFICATION DETAIL**

SCALE: N.T.S.

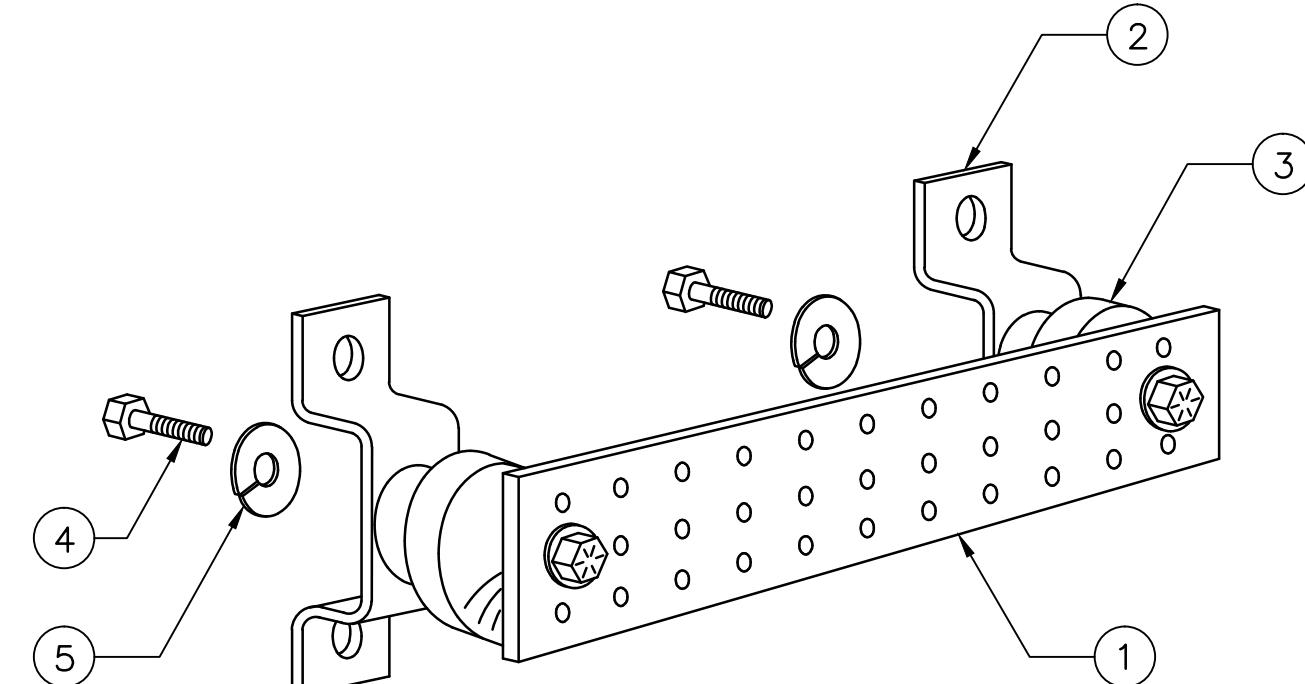
NO.	DATE	REVISED PER RFDS	KCD	NDB	NDB
3	03/01/17	REVISED PER CLIENT COMMENTS	KCD	NDB	NDB
2	2/21/17	REVISED PER STRUCTURAL MODS	KCD	NDB	NDB
1	1/4/17	REVISED PER RFDS	KCD	NDB	NDB
0	09/20/16	ISSUED AS FINAL	NJM	NDB	NDB
NO.	DATE	REVISIONS	BY	CHK	APP'D
		SCALE: AS SHOWN	DESIGNED BY:	NJM	DRAWN BY: AM



AT&T		
DRAWING TITLE: DETAILS		
JOB NUMBER	DRAWING NUMBER	REV
16035-EMP	A-4	3



**TYPICAL GROUND BAR CONNECTION DETAIL**  
SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x 1/4")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	5/8"-11x1" H.H.C.S.
5	4	5/8" LOCK WASHER

**GROUND BAR DETAIL**  
SCALE: N.T.S.



## RADIO FREQUENCY EMISSIONS ANALYSIS REPORT EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2001

New Milford-Boardman Road  
33 Boardman Road  
New Milford, CT 06776

**September 20, 2016**

**EBI Project Number: 6216004150**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>11.12 %</b>



September 20, 2016

AT&T Mobility – New England  
Attn: Cameron Syme, RF Manager  
550 Cochituate Road  
Suite 550 – 13&14  
Framingham, MA 06040

## Emissions Analysis for Site: **CT2001 – New Milford-Boardman Road**

EBI Consulting was directed to analyze the proposed AT&T facility located at **33 Boardman Road, New Milford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **33 Boardman Road, New Milford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) 2 LTE channels (2100 MHz (AWS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the **Powerwave 7770**, **CCI HPA-65R-BUU-H6**, **CCI HPA-65R-BUU-H8**, **KMW AM-X-CD-16-65-00T-RET** and the **KMW AM-X-CD-17-65-00T-RET** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerlines of the proposed antennas are **120 feet** above ground level (AGL) for **Sector A**, **120 feet** above ground level (AGL) for **Sector B** and **120 feet** above ground level (AGL) for Sector C.
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	<b>0.77 %</b>	Antenna B1 MPE%	<b>0.77 %</b>	Antenna C1 MPE%	<b>0.77 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	12.65 / 15.25 dBd	Gain:	12.65 / 15.25 dBd	Gain:	14.05 / 15.55 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,124.05	ERP (W):	5,124.05	ERP (W):	5,831.65
Antenna A2 MPE%	<b>1.65 %</b>	Antenna B2 MPE%	<b>1.65 %</b>	Antenna C2 MPE%	<b>1.94 %</b>
Antenna #:	<b>3</b>	Antenna #:	<b>3</b>	Antenna #:	<b>3</b>
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H8
Gain:	14.75 dBd	Gain:	14.75 dBd	Gain:	14.95 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,582.46	ERP (W):	3,582.46	ERP (W):	3,751.30
Antenna A3 MPE%	<b>0.99 %</b>	Antenna B3 MPE%	<b>0.99 %</b>	Antenna C3 MPE%	<b>1.04 %</b>
Antenna #:	<b>4</b>	Antenna #:	<b>4</b>	Antenna #:	<b>4</b>
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-17-65-00T-RET
Gain:	13.35 / 14.95 dBd	Gain:	13.35 / 14.95 dBd	Gain:	14.65 / 15.35 dBd
Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>	Height (AGL):	<b>120 feet</b>
Frequency Bands	700 MHz / 2100 MHz (AWS)	Frequency Bands	700 MHz / 2100 MHz (AWS)	Frequency Bands	700 MHz / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,346.56	ERP (W):	6,346.56	ERP (W):	7,614.13
Antenna A3 MPE%	<b>2.58 %</b>	Antenna B3 MPE%	<b>2.58 %</b>	Antenna C3 MPE%	<b>3.21 %</b>

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	<b>6.95 %</b>
Sprint	0.54 %
Verizon Wireless	3.45 %
T-Mobile	0.18 %
Site Total MPE %:	<b>11.12 %</b>

AT&T Sector A Total:	5.98 %
AT&T Sector B Total:	5.98 %
AT&T Sector C Total:	6.95 %
Site Total:	11.12 %



## AT&T Max Values (Sector C)

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	120	2.29	850 MHz	567	0.40%
AT&T 1900 MHz (PCS) UMTS	2	656.33	120	3.63	1900 MHz (PCS)	1000	0.36%
AT&T 850 MHz GSM	2	762.29	120	4.22	850 MHz	567	0.74%
AT&T 2300 MHz (WCS) LTE	2	2,153.53	120	11.91	2300 MHz (WCS)	1000	1.19%
AT&T 1900 MHz (PCS) LTE	2	1,875.65	120	10.38	1900 MHz (PCS)	1000	1.04%
AT&T 700 MHz LTE	2	1,750.46	120	9.68	700 MHz	467	2.07%
AT&T 2100 MHz (AWS) LTE	2	2,056.61	120	11.38	2100 MHz (AWS)	1000	1.14%
Total:							6.95%



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	5.98 %
Sector B:	5.98 %
Sector C:	6.95 %
AT&T Maximum Total (per sector):	6.95 %
Site Total:	11.12 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **11.12 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.